Document of
The World Bank

FOR OFFICIAL USE ONLY

Report No: PAD571

INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF US$470 MILLION

TO THE

REPUBLIC OF INDIA

FOR A

NORTH EASTERN REGION POWER SYSTEM IMPROVEMENT PROJECT

June 1, 2016

Energy & Extractives Global Practice
South Asia Region

CURRENCY EQUIVALENTS
(Exchange Rate Effective as of May 9, 2016)

Currency Unit = Indian Rupees
INR 66.6 = US$1

FISCAL YEAR
April 1 – March 31

ABBREVIATIONS AND ACRONYMS

AC	Autonomous Council
AEGCL	Assam Electricity Grid Company Limited
APDCL	Assam Power Distribution Company Limited
APDRP	Accelerated Power Development and Reform Program
ATC	Aggregate Technical and Commercial
BAFO	Best and Final Offer
BPL	Below Poverty Line
CAAA	Comptroller of Aid, Accounts and Audit
CBIS	Capacity Building and Institutional Strengthening
CEA	Central Electricity Authority
CPIU	Central Project Implementation Unit
CPS	Country Partnership Strategy
CPTD	Compensatory Plan for Temporary Damages
DC	Direct Contracting
DDUGJY	Deendayal Upadhyaya Gram Jyoti Yojana
DEA	Department of Economic Affairs
DGS&D	Directorate General of Supplies and Disposals
DPN	Department of Power, Nagaland
DoNER	Ministry of Development for the North Eastern Region
EMP	Environment Management Plan
EIRR	Economic Internal Rate of Return
EPS	Electric Power Survey
ERP	Enterprise Resource Planning
ESPP	Environmental and Social Policy and Procedures
ESPPF	Environment and Social Policy and Procedures Framework
FEAR	Final Environmental Assessment Report
FIRR	Financial Internal Rate of Return
FM	Financial Management
GHG	Greenhouse Gas
GIS	Geographic Information System
GoI	Government of India
GW	Giga Watts
GRS	Grievance Redress Service
HPC	High Powered Committee
HR	Human Resources
IA	Implementing Agency

ICB	International Competitive Bidding
IDC	Interest During Construction
IEAR	Initial Environmental Assessment Report
IPDS	Integrated Power Development Scheme
IPF	Investment Project Financing
IT	Information Technology
IUFR	Interim Unaudited Financial Report
JCC	Joint Coordination Committee
JERC	Joint Electricity Regulatory Commission
KPI	Key Performance Indicator
kV	kilovolt
kWh	kilowatt-hour
LARR Act	The Right to Fair Compensation in Land Acquisition, Resettlement and Rehabilitation Act, 2013
LHS	Left Hand Side
MBC	Metering, Billing, and Collections
MePTCL	Meghalaya Power Transmission Corporation Limited
MePDCL	Meghalaya Power Distribution Corporation Limited
MoF	Ministry of Finance
MoP	Ministry of Power
M&E	Monitoring & Evaluation
MSPCL	Manipur State Power Company Limited
MSPDCL	Manipur State Power Distribution Company Limited
MVA	Megavolt-Ampere
MW	Mega Watts
NEC	North Eastern Council
NER	North Eastern Region
O&M	Operations and Maintenance
OPGW	Optical Ground Wire
PAP	Project Affected Persons
PAT	Profit After Tax
PDO	Project Development Objective
PEDM	Power and Electricity Department, Mizoram
PIP	Project Implementation Plan
PIU	Project Implementation Unit
PPIU	PMC Project Implementation Unit
PPSD	Project Procurement Strategy Document
PSC	Project Steering Committee
R&R	Resettlement and Rehabilitation
R-APDRP	Restructured Accelerated Power Development and Reform Program
RAP	Resettlement Action Plan
RFB	Request for Bids
RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
RHS	Right Hand Side
RPF	Resettlement Policy Framework
RoW	Right-of-Way

SA	Social Assessment
SBD	Standard Bidding Document
SC	Scheduled Caste
SF6	Sulphur Hexafluoride
S&I	Supply and Installation
SIA	Social Impact Assessment
SIMP	Social Impact Management Plan
SPCU	State Project Coordination Unit
SPD	Standard Procurement Document
ST	Scheduled Tribe
T&D	Transmission and Distribution
TL	Transmission Line
TPDP	Tribal People Development Plan
TPDPF	Tribal People Development Planning Framework
ToR	Terms of Reference
TSECL	Tripura State Electricity Corporation Limited

Regional Vice President:	Annette Dixon
Country Director:	Onno Ruhl
Senior Global Practice Director:	Anna M. Bjerde (Acting)
Practice Manager:	Julia Bucknall
Task Team Leaders:	Rohit Mittal, Kwawu Mensan Gaba

INDIA
NORTH EASTERN REGION POWER SYSTEM IMPROVEMENT PROJECT

TABLE OF CONTENTS

Page

PAD DATA SHEET

India

North Eastern Region Power System Improvement Project (P127974)

PROJECT APPRAISAL DOCUMENT

SOUTH ASIA

GEE06

Report No.: PAD571

Basic Information			
Project ID P127974	EA Category A - Full Assessment		Team Leader(s) Rohit Mittal,Kwawu Mensan Gaba
Lending Instrument Investment Project Financing	Fragile and/or Capacity Constraints [ ]		
	Financial Intermediaries [ ]		
	Series of Projects [ ]		
Project Implementation Start Date 01-Jan-2016	Project Implementation End Date 31-Mar-2023		
Expected Effectiveness Date 15-Dec-2016	Expected Closing Date 31-Mar-2023		
Joint IFC No			
Practice Manager/Manager Julia Bucknall	Senior Global Practice Director Anna M. Bjerde	Country Director Onno Ruhl	Regional Vice President Annette Dixon

Borrower: Department of Economic Affairs Ministry of Finance Government of India			
Responsible Agency: POWERGRID Corporation Limited			
Contact:	B Mishra	Title:	Executive Director
Telephone No.:	91-124-2571955	Email:	bmishra@powergridindia.com

Project Financing Data(in USD Million)					
[X]	Loan	[ ]	IDA Grant	[ ]	Guarantee
[ ]	Credit	[ ]	Grant	[ ]	Other

Total Project Cost:	952.20	Total Bank Financing:	470.00
Financing Gap:	0.00		

Financing Source	Amount
Borrower	482.20
International Bank for Reconstruction and Development	470.00
Total	952.20

Expected Disbursements (in USD Million)

Fiscal Year	2016	2017	2018	2019	2020	2021	2022	2023		
Annual	0.00	10.60	42.20	70.30	112.50	117.20	93.80	23.40		
Cumulative	0.00	10.60	52.80	123.10	235.60	352.80	446.60	470.00		

Institutional Data

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Cross Cutting Topics

[X] Climate Change

[ ] Fragile, Conflict & Violence

[ ] Gender

[ ] Jobs

[ ] Public Private Partnership

Sectors / Climate Change

Sector (Maximum 5 and total % must equal 100)

Major Sector	Sector	%	Adaptation Co-benefits %	Mitigation Co-benefits %
Energy and mining	Transmission and Distribution of Electricity	100		100
Total		100		

☐ I certify that there is no Adaptation and Mitigation Climate Change Co-benefits information applicable to this project.

Themes

Theme (Maximum 5 and total % must equal 100)

Major theme	Theme	%
Financial and private sector development	Infrastructure services for private sector development	50
Financial and private sector development	Corporate governance	33

Public sector governance	Other public sector governance	17
Total		100

Proposed Development Objective(s)

The proposed project development objective (PDO) is to increase the delivery of electricity at the boundaries of the power distribution network in the participating states in the North Eastern Region.

Components

Component Name	Cost (USD Millions)
Component A: Priority investments for Strengthening Intrastate Transmission, Sub-transmission And Distribution Systems	937.60
Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States	13.40
Front end fees	1.20

Systematic Operations Risk- Rating Tool (SORT)

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

Compliance

Policy

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

Safeguard Policies Triggered by the Project	Yes	No

Environmental Assessment OP/BP 4.01	**X**	
Natural Habitats OP/BP 4.04	**X**	
Forests OP/BP 4.36	**X**	
Pest Management OP 4.09		**X**
Physical Cultural Resources OP/BP 4.11	**X**	
Indigenous Peoples OP/BP 4.10	**X**	
Involuntary Resettlement OP/BP 4.12	**X**	
Safety of Dams OP/BP 4.37		**X**
Projects on International Waterways OP/BP 7.50		**X**
Projects in Disputed Areas OP/BP 7.60		**X**

Legal Covenants

Name	**Recurrent**	**Due Date**	**Frequency**
Project Steering Committee	**X**		CONTINUOUS

Description of Covenant

GoI to maintain a Project Steering Committee headed by MoP and comprised of representatives of MoP and the participating States, to monitor progress in the implementation of the Project, and coordinate with/provide guidance to POWERGRID in the carrying out of Project activities.

Name	**Recurrent**	**Due Date**	**Frequency**
Project Implementation Units	**X**		CONTINUOUS

Description of Covenant

POWERGRID to maintain: (i) a Central Project Implementation Unit (CPIU) for coordination, monitoring and evaluation of Project activities: and (ii) PMC Project Implementation Units (PPIUs) located in each participating State, for the day to day implementation of Project activities.

Name	**Recurrent**	**Due Date**	**Frequency**
Internal Audits	**X**		CONTINUOUS

Description of Covenant

POWERGRID to select and engage auditing consulting firm or auditing institute, within 6 months as of the effective date, to carry out semi-annual internal audits.

Name	**Recurrent**	**Due Date**	**Frequency**
Implementation/Participation Agreement	**X**		CONTINUOUS

Description of Covenant

POWERGRID to carry out the Project in accordance with the respective Implementation/Participation Agreement entered with the each participating States, after ensuring that the participating state has established its respective State Project Coordination Unit; and that the respective state-specific PIP has been prepared.

Name	**Recurrent**	**Due Date**	**Frequency**
Project Documents	**X**		CONTINUOUS

Description of Covenant			
POWERGRID to implement the Project in accordance with the state-specific PIPs.			
Name	**Recurrent**	**Due Date**	**Frequency**
Safeguard Documents	**X**		CONTINUOUS

Description of Covenant			
POWERGRID, the participating States and their respective Power Utilities/Departments to carry out the Project in accordance with the state specific ESPPFs, the IEARs, the CPTDs and the TPDPs, as well as the EMPs and the RAPs prepared or to be prepared in accordance thereto upon the screening civil works for the transmission, substations and/or distribution networks.			
Name	**Recurrent**	**Due Date**	**Frequency**
Civil Works Contracts	**X**		CONTINUOUS

Description of Covenant			
POWERGRID to ensure that: (i) prior to commencing any civil works: (A) all necessary governmental permits and clearances have been obtained and any conditions attached thereto have been fulfilled; and (B) all resettlement measures set forth in the applicable RAP have been fully executed (including full payment for land compensation or relocation assistance); (ii) prior to commencing civil works on transmission lines, the respective CPTD plan has been agreed with the Bank; and (iii) each contract for civil works includes the contractors obligation to comply with the relevant safeguard documents.			
Name	**Recurrent**	**Due Date**	**Frequency**
Safeguards Monitoring and Evaluation	**X**		CONTINUOUS

Description of Covenant			
POWERGRID to: (i) maintain monitoring and evaluation protocols and record keeping procedures to adequately supervise and assess implementation of/compliance with safeguard documents; (ii) provide quarterly safeguards reports and (ii) unless otherwise agreed with the Bank, engage independent consultants to carry out final environmental assessment reports (FEARs) within 120 days after completion of stage I clearance under the Forest (Conservation) Act or 6 months after contractors completion of the detailed survey for the final placement route/ alignment of a transmission line.			
Name	**Recurrent**	**Due Date**	**Frequency**
Grievance Redress Mechanism	**X**		CONTINUOUS

Description of Covenant			
POWERGRID to make its best efforts to ensure that each participating States establishes within 3 months after effectiveness and thereafter operates throughout Project implementation a grievance redressal mechanism for the handling of stakeholders complaints arising out of the Project implementation, as incorporated in the state-specific ESPPF.			
Name	**Recurrent**	**Due Date**	**Frequency**
Asset Transfer	**X**		CONTINUOUS

Description of Covenant
GoI to make its best efforts, and POWERGRID and the States Power Utilities/Department to take all action required, to promptly transfer the ownership and maintenance of the assets created (from POWERGRID to the States Power Utilities/Departments) promptly after the commissioning of such assets.

Name	Recurrent	Due Date	Frequency
Technical Assistance/ Capacity Building	X		CONTINUOUS

Description of Covenant

POWERGRID to prepare, with each participating State, and thereafter implement the plans for capacity building and technical assistance for the respective states Power Utilities/Departments, all in a manner and substance (including ToRs) agreed with the Bank.

Name	Recurrent	Due Date	Frequency
Audit Reports	X		CONTINUOUS

Description of Covenant

POWERGRID to submit project financial statements for each fiscal year, audited by independent auditors, within 9 months after the end of the fiscal year.

Conditions

Source Of Fund	Name	Type

Description of Condition

Team Composition

Bank Staff

Name	Role	Title	Specialization	Unit
Rohit Mittal	Team Leader (ADM Responsible)	Senior Energy Specialist	Task Team Leader	GEE06
Kwawu Mensan Gaba	Team Leader	Lead Energy Specialist	Co-Task Team Leader	GEEDR
Arun Kumar Kolsur	Procurement Specialist (ADM Responsible)	Senior Procurement Specialist	Procurement Specialist	GGO06
Savinay Grover	Financial Management Specialist	Sr Financial Management Specialist	Financial Management Specialist	GGO24
Amol Gupta	Team Member	Energy Specialist	Economic and Financial Analysis Specialist	GEE06
Boonsri Prasertwaree Kim	Team Member	Program Assistant	Program Assistant	GEE06
Deepali Uppal	Team Member	Program Assistant	Program Assistant	SACIN
Defne Gencer	Team Member	Senior Energy Specialist	Energy Specialist	GEE06

Gaurav D. Joshi	Safeguards Specialist	Senior Environmental Specialist	Environment Safeguard Specialist	GEN06
Kavita Saraswat	Team Member	Sr Power Engineer	Technical Specialist	GEE06
Martin M. Serrano	Counsel	Senior Counsel	Lawyer	LEGES
Mridula Singh	Team Member	Senior Social Development Specialist	Gender Specialist	GSU06
Payal Malik Madan	Team Member	Program Assistant	Program Assistant	SACIN
Sona Thakur	Team Member	Senior Communications Officer	Communications Specialist	SAREC
Suryanarayana Satish	Safeguards Specialist	Senior Social Development Specialist	Social Safeguard Specialist	GSU06

Extended Team

Name	Title	Office Phone	Location
Ramola Bhuyan	Financial Management Consultant		India

Locations

Country	First Administrative Division	Location	Planned	Actual	Comments
India	Tripura	State of Tripura	X		
India	Nagaland	State of Nagaland	X		
India	Mizoram	State of Mizoram	X		
India	Meghalaya	State of Meghalaya	X		
India	Manipur	State of Manipur	X		
India	Assam	State of Assam	X		

Consultants (Will be disclosed in the Monthly Operational Summary)

Consultants Required ? Consultants will be required

I. STRATEGIC CONTEXT

A. Country Context

1. As noted in the Country Partnership Strategy[1] (CPS) for India for FY2013–2017, India's economic and human development is one of the most significant global achievements of recent times. Between 2005 and 2010, India's share of the global gross domestic product increased from 1.8 to 2.7 percent, and 53 million people were lifted out of poverty. Growth has steadily accelerated over time, showing resilience even in the aftermath of the global financial crisis. In the last decade, India's economy expanded at an average annual rate of 7.6 percent, placing it in the top 10 of the world's fastest growing nations. Exports accounted for 21.5 percent of the gross domestic product, three times more than in 1990, and net inflows of foreign direct investment constituted another 1.6 percent. India is home to globally recognized companies in pharmaceuticals, steel, and space technologies, and the country is a leader in the use of information technology (IT) for e-government purposes and public service delivery. In line with these transformations, India is now in the top 10 percentile of fast growing nations and has become a prominent global voice. Progress in key human development indicators has been remarkable; life expectancy more than doubled, from 31 years in 1947 to 65 years in 2012, and adult literacy more than quadrupled, from 18 percent in 1951 to 74 percent in 2011.

2. However, this rapid economic growth and positive human development has not been widely shared as the Indian society remains highly segmented and income inequality is rising. At present, more than 400 million people still live in poverty. With population growth, the absolute number of poor people actually increased in some of India's poorest states between 2004–05 and 2009–10, with poverty rates three to four times higher than those of the most advanced states—Haryana, Kerala, and Punjab. In addition, structural inequalities or handicaps have kept entire groups or regions trapped, unable to take advantage of opportunities that economic growth has offered. One such region is the North Eastern Region (NER).

3. The NER stretches across the eastern foothills of the Himalayan mountain range and comprises seven states. Geographically, the region is connected to the other parts of the country through a small 'chicken neck' corridor in the state of West Bengal. With a total population of 45.6 million (2011 census), the sparsely populated NER accounts for about 3.7 percent of India's total population and covers 7.9 percent of India's total geographical area. The vast majority of the region's population lives in rural areas, accounting for 82 percent of the total population compared to the national average of 69 percent (2011).

4. The NER lags behind the rest of India in important parameters of growth as well as in the investment climate. The standard of living, as measured by average per capita gross state domestic product in the region, is only 74 percent of the national average (2008–09), while 32 percent of the region's population lives below the poverty line, primarily in rural areas, as compared to the national average of about 29.8 percent (2009–10). The slow pace of industrialization and limited opportunities for productive economic activities have led to a distressed economy and an alarmingly high youth unemployment rate of 14 percent, despite high rates of literacy. The poor economic performance of the NER is further compounded by widely recognized issues such as

[1] Report No. 76176-IN, Country Partnership Strategy for India for the Period FY2013–17, March 21, 2013.

geopolitical isolation, protracted insurgency in some areas, and recurring natural disasters. The severe development backlog has added to levels of discontent seen in the region in the past. The inadequate security environment in some parts of the region has in turn vitiated the investment climate in the region.

5. Despite being well endowed with natural resources, the gap between the region and the rest of India continues to widen. The region possesses substantial estimated energy reserves, including more than 40 percent of the estimated 150 GW hydropower potential of the country, 37 percent of the estimated 773 million tons of crude petroleum reserves and 15 percent of the 1,115 billion m^3 of natural gas reserves in the country. As shown in the November 2011 study on 'Energy Intensive Sectors of the Indian Economy - Path to Low Carbon Development',[2] hydropower remains a key enabler of a lower carbon growth path in India. Further, the Government of India (GoI), in its Nationally Determined Contribution (NDC)[3] approved by the Union Cabinet, announced at the Conference of Parties (COP) 21 in Paris that it aims to increase to 40 percent the share of installed electric power capacity from non-fossil fuel-based energy resources by 2030. By holding such an important share of the national hydropower development potential, the NER will be critical to the deployment of a clean energy strategy for the country. The abundance of other energy resources also positions the NER at the center of the energy security equation for India. Furthermore, with its significant deposits of mineral reserves, including limestone, clay, and iron ore, the NER has the potential to become a major contributor to the national economy. Finally, the region is key to the geopolitical 'Look East' strategy of the GoI toward its neighbors. Bounded by Bangladesh, Bhutan, People's Republic of China, Nepal, and Myanmar, the development of the NER is critical as India seeks to enhance its cooperation with its neighbors.

6. Without rapid economic growth, poverty reduction and shared prosperity cannot take place in the NER. With that in mind and to help close the NER's gap with the rest of the country, the GoI has made specific policy efforts for, and channeled substantial investments to the region. First, as part of the special development package for the region, dedicated schemes and programs by the GoI for various sectors earmark 10 percent of their total outlay to the region. All the NER states are classified as 'special category states' and receive 90 percent of their funding from the Niti Aayog (earlier known as the Planning Commission) in the form of grants from the GoI, and the remaining 10 percent comes as a loan to the concerned state government. Second, in addition to these resource transfers, the GoI has attempted to strengthen the institutional framework for development in the region by creating the Ministry of Development for the North Eastern Region (DoNER) in 2004 for integrated socioeconomic development of the region, with the objectives of removing infrastructure bottlenecks, providing basic services, creating a conducive environment for private investment and to remove the impediments to lasting peace and security. Those efforts notwithstanding, expected impacts did not fully materialize on the ground for various reasons, including a highly challenging security situation. The region continues to lag in development and is still hampered by a deficit in physical infrastructure. Based on lessons learned from all these initiatives, the GoI developed the NER Vision 2020, which was endorsed by all the NER states in May 2008.

---

[2] World Bank Report No. 54607-IN.

[3] http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf

7. In addition to its specific focus on the NER, the GoI has placed special emphasis on infrastructure investment across the country as a key component of its broader effort to restore economic growth, which declined to an average of 4.6 percent per year over 2012–14 after achieving a high average of 8.3 percent per year during 2004–12. The Twelfth Five Year Plan (2012–17) lays special emphasis on infrastructure development, as quality infrastructure is important not only for sustaining high growth but also for ensuring inclusive growth.

B. Sectoral and Institutional Context

8. Enabled by the Electricity Act of 2003 and a favorable economic environment in the following years, India's electricity sector has made significant progress in the last decade. An ambitious program of capacity development in generation was implemented, and at the end of March 2016, installed capacity in India stands at 302 GW, making the country's power system the fifth largest in the world. More than half of this capacity addition has come in the last decade, with more than 160 GW being added since 2007. On the transmission side, with the recent connection of the southern grid to the rest of the system, the country has now moved from the five separate regional grids to an advanced integrated national transmission grid that can balance demand and load flows across the country. The transmission grid is owned and operated by the central transmission utility, POWERGRID. Substantial gains have been made in expanding access to electricity, which rose from 56 percent of the population in 2001 to 67 percent in 2011 as a result of an ambitious GoI scheme, the Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)/Deendayal Upadhyaya Gram Jyoti Yojana (DDUGJY).[4] However, alongside these accomplishments, there remain significant challenges. The average annual per capita consumption of electricity was 1,010 kWh in 2014–15 (against a figure of 779 kWh in 2009–10), less than one-third of the world average (3,045 kWh) and also much below that in other emerging economies such as Brazil (2,438 kWh in 2011) and People's Republic of China (3,298 kWh in 2011). It is estimated that India has 39 GW of captive capacity, equivalent to around 15 percent of the total installed generation capacity. The system's average estimated peak demand deficit of about 4.7 percent (2015) and average energy deficit of about 3.6 percent (2015) has resulted in high coping costs for industries and households. Furthermore, almost 300 million people in the country do not have access to electricity, with the majority being in rural areas. According to the 2011 census, 45 percent of the households in rural areas still do not have access to electricity.

9. Going forward, the power sector will need to develop in a way that is consistent with the demands placed on it by the country's growth trajectory, urbanization patterns over time, and consumer aspirations. In the next two decades, India will face immense challenges if it is to sustain 8–10 percent economic growth required to end poverty, achieve human development goals and the latest vision of the GoI to have 24x7 power for all by 2019. While addressing the challenges at the national level, the GoI also needs to help states tackle their own inefficiencies and growth problems

[4] The GoI has launched the scheme 'Deendayal Upadhyaya Gram Jyoti Yojana' in 2014 with the following components: (a) separation of agriculture and nonagricultural feeders facilitating judicious rostering of supply to agricultural and nonagricultural consumers in rural areas; (b) strengthening and augmentation of sub-transmission and distribution infrastructure in rural areas, including metering of distribution transformers/feeders/consumers; (c) rural electrification according to the RGGVY. The erstwhile RGGVY scheme for village electrification and providing electricity distribution infrastructure in the rural areas has been subsumed in the DDUGJY scheme.

as limited access to electricity and inadequate power supply remain binding constraints to human and economic development.

10. **Power sector in the NER**. The NER has a very small and underdeveloped power system. The peak power demand in the region was 2,573 MW (2016), or just a little over one-fourth of the peak power demand in Haryana, which has a population of 25.3 million, which is slightly more than half of the NER's population of 45.6 million. The annual per capita power consumption in the NER is one-third of the national average. According to Census 2011, household electricity access rate in the NER was 47.7 percent compared to the all-India figure of 67.2 percent, while household electricity access rate in the rural areas of the NER was 37.6 percent compared to the all-India figure of 55.3 percent.

11. There are significant barriers to providing reliable and quality power supply in the NER. In 2016, the region faced an energy shortage of 5.2 percent and a peak shortage of 8.0 percent on suppressed demand, according to the Central Electricity Authority (CEA). The historical underinvestment in the power sector has imposed a heavy toll on the availability and reliability of power supply.

12. Only around 577 MW of new generation capacity was added in the NER over the period of ten years between April 2004 and September 2014 while about 740 MW of new generation capacity has been added between November 2014 and March 2016. While generation capacity is slowly being increased, there have been inadequate investments in the transmission, sub-transmission and distribution network in the region because of a combination of factors, including limited financial resources. As a result, the existing intrastate transmission and distribution (T&D) infrastructure in all the NER states has bottlenecks with regard to inadequate capacity or lack of capacity, which constrains power delivery to the consumers. Some states are not able to draw their allocated share of power from the national grid while others have no redundancy available. Similarly, distribution infrastructure is either dilapidated or does not extend to all consumers. Unless the existing T&D network constraints are removed, these constraints will continue to prevent consumers from benefitting from this additional power generation in the region.

13. The NER Vision 2020 recognizes the challenges facing the power sector in the region and its inability to promote economic development. In this context, the Vision 2020 document states that, "Almost every North Eastern State is deficit in power, which is important given the nascent state of industrial and other economic activities based on power in the region…Power consumption has remained virtually stagnant in most of the states over a period of more than ten years, with the exception of Meghalaya and…In Manipur, power consumption has actually declined and is stagnant in Assam…For the future, ambitious plans have been drawn up for making NER not only self-sufficient in power but also the 'power house' for the rest of the country. All the states need to develop their internal transmission grids to avoid incurring wasteful expenditure on wheeling power from the central grid."

14. A large generation capacity addition program is already under way to improve the power supply in the region. Around 3,000 MW of mainly hydropower and thermal capacity are being developed by public sector players (such as the NHPC Limited, NTPC Limited, North Eastern Electric Power Corporation Limited, to name a few) in the NER and are expected to be commissioned over the 2017- period. Around 70 percent of this power has been allocated to the

region, while the remaining 30 percent is available for other states. With this allocation, the supply available to the NER states will almost double and this is expected to lead to a surplus at the regional level. As noted in the NER Vision 2020, all the states need to rehabilitate and expand their internal transmission grids to efficiently transmit and use this power that is expected to become available.

15. The transmission, sub-transmission and distribution networks within each NER state are being managed by the respective state power utility or department. These power utilities and departments supply power into their respective state network using interstate transmission lines (TLs) owned by POWERGRID, which are interconnected to the state's network at particular substations. Progress in implementing the sector reform and structural changes envisaged in the Electricity Act of 2003 has been slow in the NER. Two of the states are served by a vertically integrated department within the state government, while in other states, some form of unbundling and/or corporatization has taken place. A brief summary of the sector structure in the six NER states participating in the project, is provided below:

(a) Assam, Manipur, and Meghalaya have unbundled and corporatized the power sectors and have separate T&D utilities. These are the Assam Electricity Grid Corporation Limited (AEGCL) for transmission and Assam Power Distribution Company Limited (APDCL) for distribution in Assam; Manipur State Power Company Limited (MSPCL) for generation and transmission and Manipur State Power Distribution Company Limited (MSPDCL) for distribution in Manipur; and Meghalaya Power Transmission Corporation Limited (MePTCL) for transmission and Meghalaya Power Distribution Corporation Limited (MePDCL) for distribution in Meghalaya.

(b) Tripura has corporatized the power sector and has an integrated T&D utility, namely the Tripura State Electricity Corporation Limited (TSECL).

(c) Mizoram and Nagaland have a department within the state government that looks after generation and T&D of electricity within the state. These are the Power and Electricity Department, Mizoram (PEDM) and the Department of Power, Nagaland (DPN).

16. Although state-level Electricity Regulatory Commissions are functioning in four states (except in Manipur and Mizoram which have a Joint Electricity Regulatory Commission [JERC]), development of the regulatory framework is still at its early stages.

17. The six NER states covered in the project scope are connected to the national transmission network mainly at 220 kV and 132 kV. The 33 kV system is the backbone of power distribution system in the six NER states. The utilities operate an existing network, which is quite old (in some cases as old as 40 years) and has not been adequately maintained and is prone to high technical and non-technical losses (aggregate technical and commercial (ATC) losses ranging from 24 percent to 53.5 percent) as well as frequent interruptions and outages. In addition, most of the utilities have high operating costs and incur commercial losses, thus relying on the state government for financial support.

18. To address efficiency improvement challenges at the distribution level, the GoI's Restructured Accelerated Power Development and Reform Program (R-APDRP)/ Integrated

Power Development Scheme (IPDS)[5] is providing financial support to the NER states for towns and cities with populations greater than 10,000 people. The focus of the program is on actual, demonstrable performance with regard to sustained loss reduction. The program is being carried out in two parts. Part A of the program includes projects for the establishment of baseline data and IT applications for energy accounting and auditing, as well as IT-based consumer services, including metering, billing, and collections (MBC), and geographic information system (GIS) based assets and consumer mapping to bring the utilities in line with the state-of-the art in the industry. Part B of the program supports regular distribution strengthening or reinforcement projects. Under Part A of the R-APDRP, schemes for 135 towns have been approved. As a first step toward the implementation of Part A, a single IT implementing agency (IA) has been appointed for the entire NER.

19. Further, to expand electricity access to rural areas, the GoI's flagship program, the RGGVY/ DDUGJY, is working toward providing connections to all villages and free connections to below poverty line (BPL) households. Under the program, the GoI aims to provide access to around 2.39 million rural BPL households across the NER, aiming to provide access to all rural households by 2022. Against this target, the program has already provided connectivity to a little more than 1.65 million rural BPL households.

20. To reduce the gap between the requirement and availability of the intrastate T&D system, it is necessary to provide 132 kV/220 kV connectivity to all the six NER states for proper voltage management and lower distribution losses. Similarly, the distribution system in all these six states, which mainly relies on a 33 kV network, will be strengthened substantially.

21. Recognizing that intrastate T&D systems in the NER states have remained very weak and that there is a critical need to improve the performance of these networks, the CEA developed a comprehensive scheme for the NER in consultation with POWERGRID and the concerned state governments. This scheme is intended to (a) augment the existing T&D infrastructure to improve the reliability of service delivery across all the NER states and (b) build institutional capacity of the power utilities and departments in the NER. This scheme is part of the GoI's wider efforts to develop energy resources in the NER for electricity supply within the region, to strengthen transmission networks, expand and strengthen sub-transmission systems, and extend last mile electricity connectivity to households.

22. Considering the current challenges and investment needs in the sector, the GoI requested the World Bank's support in implementing a set of priority investments in six NER states. The government requested a total funding of US$1.5 billion, which is proposed to be implemented and financed in three phases. This project supports the first phase of the GoI's scheme.

23. As part of the preparation of the proposed operation, an extensive diagnostic study of the power sector in six NER states was carried out. The comprehensive study (with financial support from the Energy Sector Management Assistance Program and Partnership for South Asia

[5] GoI has launched the IPDS for (a) strengthening sub-transmission and distribution infrastructure in urban areas; (b) metering of distribution transformers/feeders/consumers in urban areas; and (c) IT enablement of distribution sector and strengthening of distribution network, as envisaged under the R-APRDRP. The erstwhile R-APDRP scheme will get subsumed within this scheme as a separate component related to IT enablement of distribution sector and strengthening of distribution network

Umbrella Fund)[6] focused on financial, operational, project planning and management, project implementation, human resources (HR) management, financial management (FM), and regulatory aspects to understand the 'as-is' situation and identify gaps in their performance. Based on this analysis, the states, with support from the Bank, prioritized a list of interventions. The list includes interventions focusing on improving the utilities' systems and processes for better operations with the ultimate goal of improving utility performance.

C. Higher Level Objectives to which the Project Contributes

24. **Alignment with the GoI's 'Look East' Policy and NER Vision 2020.** The GoI has been focusing on the development of the NER as a part of its 'Look East' Policy, which aims to strengthen cooperation and relations with its neighbors. To this end, the GoI has adopted an integrated and inclusive approach to ensure the development of the region. This is also reflected in the NER Vision 2020 document and is evident through the efforts of the Ministry of DoNER for the region. The project is aligned with this policy as upgrading and expanding the power transmission network in the NER will lead to better integration of the region with the rest of the country and contribute to enhancement of power trade.

25. According to the NER Vision 2020, accelerated economic growth in the NER will depend on developing physical infrastructure that can have a multiplier effect on development. In most states, the improvement of infrastructure service delivery, including enhanced availability of power, remains an essential condition for accelerating development and ensuring a lasting political peace while enabling the local population to benefit from economic growth and development of natural resources. The project contributes to this objective by helping improve electricity supply in the region.

26. **Alignment with the GoI's 24x7 Power for All Program.** The project investments aimed at strengthening and augmenting the transmission, sub-transmission and distribution network will also contribute to the GoI's vision of providing 24x7 power to all across the country, to facilitate inclusive growth through enhanced access of consumers to grid-connected power supply, in addition to improving its availability, adequacy, and affordability. The project aims to address the network constraints in the intrastate transmission, sub-transmission and distribution (to a limited extent) networks and potential follow-up projects are expected to look at addressing the strengthening and augmentation needs at the distribution end.

27. **Alignment with the Bank's India CPS.** The project is aligned with two of the three pillars of the 2013-17 CPS (Report No. 76176-IN, March 21, 2013), namely Integration and Inclusion. By strengthening the connectivity and integration of the NER with the rest of India, the project is aligned to the Integration pillar. Second, by its inherent design, the proposed project will strengthen and expand the T&D networks in the NER states. The project contributes to the Inclusion pillar by supporting investments that will increase the availability of power and hence creates the conditions for expansion of electricity access to unserved households. Further, increased availability of electricity supply will spur growth of its productive uses in the region, leading to enhanced quality of life, inclusive growth, and sustainable development.

[6] Partnership for South Asia is set up in collaboration with Australia's Department of Foreign Affairs and Trade by the South Asia Region of the Bank.

II. PROJECT DEVELOPMENT OBJECTIVES

A. PDO

28. The proposed project development objective (PDO) is to increase the delivery of electricity at the boundaries of the power distribution network in the participating states in the North Eastern Region.

B. Project Beneficiaries

29. The direct beneficiaries of the project are the (existing and new) customers of the power distribution companies in the six participating states of Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura, who will benefit from the anticipated increase in the availability of grid-based electricity resulting from the augmentation and strengthening of the intrastate T&D network.

30. Through facilitating the increased delivery of electricity for use by households, businesses, and various other productive uses, the project may also indirectly contribute to economic development and inclusive growth in the states and thus of the NER as a whole.

C. PDO Level Results Indicators

31. PDO level results indicators for the project are (a) the amount of electricity delivered at the boundaries of the power distribution network in each state (gigawatt hour [GWh]) and (b) the increase in transformation capacity (kilovolt-ampere [kVA]) of the power T&D network in each state.

32. The intermediate outcome indicators will be (a) TLs constructed or rehabilitated (in circuit kilometers); (b) distribution lines constructed or rehabilitated (in circuit kilometers); (c) number of grid substations constructed or upgraded (number); (d) number of distribution substations constructed or upgraded (number); (e) number of practice/process manuals updated or developed; (f) Person-days of utility staff participating in trainings; (g) Percentage of females among the number of persons participating in the safeguard consultation meetings (percentage); and (h) grievances received that are addressed within two months of receipt (percentage).

III. PROJECT DESCRIPTION

A. Project Components

33. The project covers (a) the strengthening and augmentation of intrastate transmission, sub-transmission and distribution network/system in the six states (Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura) of the NER to facilitate increased delivery (transmission) of power and (b) the development of institutional capacity of the power utilities and state power departments.

34. The project will be implemented through POWERGRID in association with six NER states. The project will be implemented over a seven-year period and has two components, namely Component A: Priority Investments for Strengthening Intrastate Transmission, Sub-transmission,

and Distribution Systems, and Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States.

Component A: Priority Investments for Strengthening Intrastate Transmission, Sub-transmission, and Distribution Systems *(Total cost: US$937.6 million, of which US$468.8 million financed by IBRD)*

35. This component will include priority investments for strengthening and augmenting the intrastate transmission, sub-transmission, and distribution networks by upgrading old and constructing new 220 kV, 132 kV, 66 kV, and 33 kV lines and associated substations in each of the six participating states. These investments will increase the electricity transfer capability of the transmission network and improve the electricity supply within the participating states, by allowing them to draw more power from the national grid, especially their allocated share of power from central sector generating stations. This component will be implemented by POWERGRID, with the support of the states. After commissioning, the assets created under the project will be owned and maintained by the respective state power utilities and departments. In addition, there may also be a requirement to fund consultancies using the Bank financing under this component and for these, the Bank guidelines will be followed.

36. Each of the participating states along with the CEA, which is the national planning body for the electricity sector in India, and POWERGRID have drawn up a long list of candidate subprojects based on current network constraints faced by the states, expected load growth, and expected availability of new generation in the coming years. Out of this long list of potential or candidate subprojects, the subprojects that meet the Bank's readiness criteria (outlined in paragraph 38) will be financed and implemented under the project. Table 1 shows the summary of planned transmission and sub-transmission lines and substation additions and augmentation under the long list of potential subprojects. Further details and the breakdown of the list below is available in Annex 2.

Table 1. Summary of Long List of Potential/Candidate Subprojects

Items[7]	Unit	Quantity
Transmission line construction (132 kV and above)	circuit kilometers	2,114
Distribution line construction (33 kV)	circuit kilometers	2,031
New 220/132 kV and 132/33 kV transmission substations	Number	33
Transmission capacity addition (new and augmentation)	MVA	4,421
New Distribution substations (33/11 kV)**	Number	85
Distribution Capacity addition	MVA	1,251

*** Does not include extension of existing substations, which are also included in the long list of potential or candidate subprojects.*

37. Based on the above long list of projects, the following allocation of project costs and funding across states was established and is presented in Table 2.

Table 2. Allocation of Project Costs and Funding across States (excluding front-end fees) for Component A

[7] All new 220 kV, 132 kV, 33 kV lines will have Optical Ground Wire (OPGW). In addition, some of the key existing lines will have OPGW installation as well.

States	IBRD Loan (US$, millions)	Counterpart Funding - GoI Contribution[8](US$, millions)	Total (US$, millions)
Assam	136.3	136.3	272.6
Manipur	39.9	39.9	79.7
Meghalaya	71.2	71.2	142.3
Mizoram	28.2	28.2	56.3
Nagaland	66.6	66.6	133.2
Tripura	126.7	126.7	253.4
Total	**468.8**	**468.8**	**937.6**

38. **Project Implementation Plans (PIPs)**. POWERGRID, together with CEA and each of the participating states, has prepared state specific Project Implementation Plans (PIP). The PIP includes a detailed description of the state's power system, system parameters, operation and maintenance practices, institutional arrangement of the sector and for this project, list of sub-components (identified till date) with their technical justification, other important investment programs underway in the state, financial management arrangements, procurement plan, economic and financial analysis of investment components, safeguard management, and management of risks for the project in the state. The PIP of each state will also serve as the Operations Manual for the project and will be a dynamic document to be updated to include additional investment components, and any changes to project's monitoring and implementation arrangements, if needed, during the course of project implementation.

39. **Criteria for inclusion of new subprojects against the state allocation.** Recognizing that flexibility under this project is needed to ensure maximum development impact, a specific provision is added to include new subprojects (outside of the long list of potential or candidate subprojects) in various states as long as they meet the following criteria that include a combination of techno-economic, environmental, and social requirements and are also able to secure the relevant clearances:

(a) State specific PIP is revised—to cover the new subproject including its technical justification, economic/financial analysis, and procurement plan—and approved;

(b) Initial Environmental Assessment Report (IEAR) for the subproject and any other safeguard document (for example, Resettlement Action Plan [RAP] and Tribal People Development Plan [TPDP], if required) in line with the state-specific Environment and Social Policy and Procedures Framework (ESPPF) are prepared, approved and disclosed.

Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States *(Total cost: US$ 13.4 million)*

40. At the request of the GoI and the states, this component will provide support for capacity building of power utilities and departments across the six participating states.

[8] Component A costs includes interest during construction (IDC) costs, which will be financed from the GoI contribution.

41. Although the power sectors in the NER states are below the national averages in size and performance, there is variance among these states. Some have done relatively better in specific areas, such as development of regulatory institutions and use of IT systems. In that context, a capacity building and institutional strengthening (CBIS) plan has been developed for each state on the basis of a state-specific diagnostic study complemented with detailed discussions with key stakeholders of the state. The main focus of the CBIS plan is to strengthen core skills of the utilities in the key areas of utility operations and management, to help the NER utilities achieve efficiency and improvement in service delivery to consumers and ensure the sustainability of assets created under the project. Focus areas of the CBIS plan include strengthening operations and maintenance (O&M) practices; commercial practices (through improvement in MBC systems and processes); load management; procurement management; FM; and HR management.

42. The activities, which will vary across the states according to the priority decided by the utility, planned to be undertaken under this component include (a) review of the O&M practices and development of an O&M manual; (b) development of a procurement manual; (c) development of standard specifications; (d) preparation of a finance and accounts manual; (e) network planning through load flow and other dynamic/transient stability studies; (f) preparation of an HR manual and policies for recruitment/promotion/transfers/training and development; (g) preparation of a road map for gradual and focused adoption and implementation of IT applications; (h) training (national and international) on technical, procurement, contract management, environment, health and safety, FM, social aspects, and so on; (i) knowledge exchange visits to other states/countries to interact and exchange ideas with their better performing utilities. This component will be fully financed by the GoI. Procurement of the consultancies to be financed under this component will be carried out according to the GoI/ POWERGRID rules and regulations and the states will be responsible for the implementation of the various initiatives developed under the program within their day-to-day systems and processes. During implementation, the Bank will provide technical support (as needed) to the states for the finalization of the scope of work for the specific activities, review of the consultant deliverables, and the development of relevant implementation plans.

B. Project Financing

43. The project will be financed through the Investment Project Financing instrument, which will cover the investments required for strengthening the intrastate power transmission, sub-transmission, and distribution systems in the NER. The GoI has chosen to denominate the loan in U.S. dollars. The GoI has opted for a variable spread option for this loan. POWERGRID will sign the Project Agreement with the Bank for the implementation of the project while the GoI will sign the Loan Agreement with the Bank. In addition, each of the six participating states will sign a Supplementary Project Agreement with the GoI and the Bank to support the implementation of the project.

C. Project Cost and Financing

44. The table provides a breakdown of project costs and financing by component:

Table 3. Project Costs and Financing by Component

Project Components	Project Cost[9] (US$, millions)	IBRD Financing (US$, millions)	GoI Financing (US$, millions)
Component A: Priority Investment for Strengthening of Intrastate transmission, Sub-transmission, and Distribution Systems	937.6	468.8	468.8[10]
Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States	13.4	0.0	13.4
Total Project Costs	951.0	468.8	482.2
Front-end fees	1.2	1.2	0.0
Total Financing Required	952.2	470.0	482.2

Note: Most of the GoI contribution will be for the consultancy fees for POWERGRID (for its services as an IA on behalf of states), land, resettlement and rehabilitation (R&R) and forest compensation related costs, and IDC. Out of the remaining funds, first US$468.8 million will be financed by IBRD and the balance will be financed by the GoI.

D. Lessons Learned and Reflected in the Project Design

45. The project builds on the lessons learned from the Bank's long-term engagement with POWERGRID and from the Bank's experiences in Haryana, West Bengal, and Maharashtra. In particular, the following lesson proved relevant to this first phase of the Bank engagement in the NER power sector—when utilities with limited institutional capacity are looking for a significant increase in capital investment over a short span of time, it is important to have the support of a strong project management consultant or a strong implementation agency to guide and handhold the utilities.

46. In addition, the first phase of such a long-term engagement should seek to help secure an improvement in the sector's technical performance and by the same token build traction for a more ambitious reform program, which will ultimately be implemented once the ownership of and commitment for reform by the state government increases. Up-front visible improvements in the quality of power supply and customer service are important for fostering a pro-reform constituency and building stakeholder consensus for reform.

47. Another important lesson is how to successfully design and implement a project under the framework of a Centrally Sponsored Scheme. The past experience of implementing similar projects, which normally span across multiple states, clearly underscored that project implementation is often adversely affected because of inadequate attention to a range of issues in preparation. To avoid implementation delays, the project has to adopt a subproject readiness criteria specifying the critical actions related to technical, environmental, and social aspects that need to be completed before contract award.

48. The project design has also benefitted from lessons from other Bank-funded projects located outside South Asia such as the Vietnam Distribution Efficiency Project (P125996), Electricity Supply Accountability and Reliability Improvement Project in the Kyrgyz Republic (P133446), and Paraguay Energy Sector Strengthening Project (P114971). The key lessons

[9] Project cost includes consultancy fees for POWERGRID (for its services as the IA on behalf of the states), land, R&R and forest compensation related costs, which will be financed 100 percent by the GoI.
[10] Includes IDC which will be financed 100 percent by the GoI.

incorporated into the project design are (a) advanced project preparation, including bidding documents for procurement of goods and works, are important to speed up project implementation; (b) project design must ensure rapid start-up; to ensure this, subprojects that meet the defined readiness criteria should be taken up first while other subprojects are getting ready; (c) a strong implementation agency with adequate capacity is needed to ensure on-time implementation; (d) social and environmental requirements need to be incorporated into contract design and project implementation; (e) adequate implementation monitoring and evaluation (M&E) systems need to be set up to keep the project on track; and (f) adequate flexibility needs to be built in the project design to allow resources to be moved across states and subprojects.

IV. IMPLEMENTATION

A. Institutional and Implementation Arrangements

49. The GoI has selected[11] POWERGRID as the Implementing Agency (IA) to implement the project in close coordination with the respective state power utilities and departments. POWERGRID will implement the project based on the Implementation/Participation agreements that were signed separately between POWERGRID and the power utilities and departments of Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura between March and July 2015 before their inclusion in the project. Once the assets are created and commissioned, they will be transferred to the respective state power utilities and departments on the basis of the takeover/handover procedure as defined in the Implementation/Participation agreement. The state power utilities and departments will then operate and maintain these assets according to normal industry practices.

50. Over the past decade, POWERGRID has acquired and developed skills required for successfully planning and implementing large-scale capital investment programs, through their mandate to develop the interstate transmission network of India and also by acting as consultant to some states to assist them to plan, design, and implement their T&D networks. All the schemes envisaged under this operation are being designed, procured, and implemented by POWERGRID. Local and foreign contractors engaged through international competitive bidding (ICB) will carry out the supply, installation, and erection works. To ensure that the states develop the capacity required to operate and maintain the assets created through this project, the Implementation/Participation agreement provides for all the states power utilities and departments to depute their engineers to POWERGRID to work alongside POWERGRID officials in implementing the schemes and thus develop an understanding of the technical and operational requirements of the assets created. This will also help enhance the strengthening of the technical capacity in the participating state power utilities and departments and will be complemented by the activities under Component B.

51. Project implementation will be under the institutional oversight of the Ministry of Power (MoP), the Ministry of Finance (MoF), and the CEA. With the signing of the Implementation/Participation agreements, a multitier monitoring mechanism at different levels (GoI, respective state governments, POWERGRID, and state power utilities and departments) has been established to regularly monitor project implementation in each participating state, identify

[11] Office Memorandum F.No.3/16/2013-Trans dated December 1, 2014 from the Ministry of Power (MoP), GoI.

issues, design/adopt solutions, and follow up on the resolution of issues as needed. Annex 3 provides details of these arrangements.

B. Results Monitoring and Evaluation

52. POWERGRID, as the IA, will provide the Bank with quarterly physical progress reports, interim financial reports, audited financial statements (within six months of the end of each financial year), and other such information as the Bank may reasonably require. Since the nature of these contracts will be turnkey supply and installation (S&I), M&E is linked to project targets upon completion of milestones such as delivery of material, erection, and commissioning.

53. The project is not financing new household connections or last mile connectivity (11 kV and below) and is not directly contributing to expanding access in the participating states. However, the project is likely to have a significant indirect contribution to the improvement of electricity access because of the increased availability of electricity in all project states, wherein the investments supported under the project are expected to lead to increased hours of supply to existing customers and increased availability of electricity supply, which may enable utilities to connect and serve new customers. To understand these benefits, a separate study is planned to be undertaken during project implementation to devise a methodology for estimating the increase in access because of T&D projects and also establish a baseline for the energy access in select project areas, which can be used to conduct impact analysis of electricity access at a later date. Such causality analysis between T&D projects and increase in electricity access is currently being conducted in the NER context.

C. Sustainability

54. There is strong ownership of the project by all the six participating states, POWERGRID, and the GoI. This commitment has also been demonstrated through their intensive engagement and involvement during project preparation. POWERGRID's involvement is a reasonable assurance that project design and implementation will be consistent with best practices in the country and industry. In addition, environmental and social issues will be handled with adequate expertise and attention, building on POWERGRID's implementation track record of earlier Bank-funded projects.

55. Environmental and social sustainability is facilitated through the adoption of the state-specific ESPPF, developed on the basis of the Environmental and Social Policy and Procedures (ESPP) of POWERGRID, by the state power utilities and departments and by setting up an institutional mechanism to manage their implementation. The participating state power utilities and departments in all the six states have adopted the ESPPF as an institutional policy for the project.

56. The subprojects identified under the project are economically and operationally sustainable. In addition, the sustainability of the project will be ensured by continuous improvement in the operational, commercial, and financial performance of the participating utilities and departments. As noted, while working on improving technical performance of the sector, parallel and concurrent action will be taken to improve the commercial and financial performance of the utilities and departments involved in this project under Component B. The

states have finalized their priority list of measures to be implemented, which were recommended after the detailed diagnostic studies, and which will be funded under Component B. Although the NER utilities are incurring a loss at the moment, the technical improvements in the utility systems and capacity strengthening initiatives are expected to contribute toward putting them on the path to recovery and long-term sustainability. During the implementation period, the Bank will continue the dialogue with all key stakeholders of the sector on the implementation of measures that will further improve the sector's financial performance over the long term. This prudent approach is based on the experience acquired in similar projects around the world.

V. KEY RISKS AND MITIGATION MEASURES

A. Overall Risk Rating Explanation

57. The risk associated with 'Sector Strategies and Policies' is rated as Substantial, as high T&D losses are associated with a complex web of political economy and governance issues. While the first phase of the engagement under the project will primarily target investments in transmission schemes with lesser associated political economy sensitivities because of the lack of a direct consumer interface, the problems at the distribution level also need to be looked into and addressed. For this, the present project design has incorporated support through the technical assistance component to build the institutional capacity of the utilities to address some of the inefficiencies in their business processes.

58. Currently, the power sector in most of these states relies on the state government's support for financial sustainability. Unless T&D losses are reduced, costs managed, and tariffs adjusted, increased power supply in the next few years is likely to lead to additional fiscal burden because of the widening revenue gaps in the sector. The GoI and the state government are fully aware of the situation and are committed to working on these issues in a practical manner. The Bank will continue the dialogue with the states during the implementation preparation period also to help them develop a suitable strategy to address this issue. One of the states, Manipur, has already unbundled and corporatized its power sector in 2014 and had also approached the Bank to explore how it can provide assistance through a non-lending technical assistance to help build the capacity of its new corporatized power utilities toward improving their operational performance and ensuring better service delivery to consumers. Furthermore, the Bank has supported the distribution utility in Manipur on strengthening O&M and HR practices.

59. The risk rating for 'Environmental and Social' is indicated as Substantial on account of the unique environment and social aspects of the NER. The presence of POWERGRID as the IA is expected to address, to the maximum extent, the issue of inadequate institutional capacity in the states across environment and social management areas. In addition, state-specific ESPPFs, based on POWERGRID's own ESPP, have been prepared and adopted by the states. The ESPPFs include the institutional structure that will be established at the level of the state power utility or department to manage the environment and social aspects of the project.

60. The stakeholder risk is rated as "Substantial" due to the fact that the decision-making process and primary responsibility for the successful implementation of the project will rest with POWERGRID, but at the same time the support and close involvement of state utilities at the local level as well as the GoI, in particular the MoP and Ministry of DoNER, at the central level will be

critical. The challenging security situation in some areas, difficult terrain, and limited accessibility further compound the other difficulties.

61. The overall risk is being rated Substantial despite POWERGRID's role and responsibility as the IA because POWERGRID will be essentially working in the states on their behalf for the implementation of this project. POWERGRID will thus require the states' close support in this challenging first engagement with limited institutional capacity of the various state institutions. However, the presence of POWERGRID, which has a strong project management experience and has deep understanding of the Bank's policies and systems, developed through more than two decades of partnership, is expected to help manage these risks. In addition, a multitier monitoring mechanism at different levels (GoI, respective state governments, POWERGRID, and state power utilities and departments) has been established to regularly monitor project implementation in each participating state, identify issues, design/adopt solutions, and follow up on the resolution of issues as needed.

VI. APPRAISAL SUMMARY

A. Economic and Financial Analysis

62. The economic benefits from the project will accrue from two streams (a) replacement of costlier diesel generation which is being used as a coping mechanism by different consumers because of unavailability of power, and (b) the increased capacity of various utilities to transmit and sell their allocated share of power from state and central sector power stations. Further, because of the state-specific nature of the project, the economic analysis for project has been done separately for each of the six participating states, resulting in six state-specific economic internal rates of return (EIRRs). Following this approach, the economic analysis yields an EIRR of 28 percent in the case of Nagaland, 29 percent in the case of Manipur, 35 percent in the case of Tripura, 52 percent in the case of Assam, 52 percent in the case of Meghalaya, and 62 percent in the case of Mizoram, under the base case scenario. Different sensitivity scenarios are shown in table 3 and details are provided in Annex 5. These high EIRRs are consistent with the fact that the project will help address electricity shortages and remove transmission bottlenecks in the various states.

Table 4. Base Case and Sensitivity Analysis for EIRR for the Project (values in %)

Name of State	Base Case	Willingness to Pay for Diesel Down to 40%	Switching Value for Willingness to Pay for Diesel (10% EIRR)	Cost Overrun by 10%	Delay in Project by 2 Years	Delay in Project by 2 Years and Cost Escalation by 10%	Delay in Commissioning of 2 of the Major Generation Plants by 2 Years
Assam	52	45	0	47	39	36	49
Manipur	29	24	17	26	23	21	27
Meghalaya	52	46	4	48	44	41	52
Mizoram	62	54	0	57	45	42	60
Nagaland	28	23	15	25	25	22	28
Tripura	35	31	5	33	34	32	35

63. According to the financing arrangements for the project, the entire capital expenditure for the project (including land and R&R costs) will be borne by the GoI (50 percent of the expenditure for Component A to be funded through IBRD loan to the GoI). The state power utilities and departments will not be contributing towards the initial capital expenditure.[12] As the state utilities and departments will not invest any up-front capital, the financial internal rate of return (FIRR) has not been calculated; however, a detailed entity level financial analysis has been conducted for the power utilities and departments in all six states to understand the impact of the project on the utility/department financials. At present, all the six power utilities and departments are making varying degrees of losses because of high technical and commercial losses, high operating expenses, and less than full cost coverage in tariffs. The analysis assumes a normative annual increase in the tariff commensurate with the expected increase in the O&M expenses of the power utilities. Further, the analysis assumes that the state governments will continue to provide financial support to the utilities and departments in line with the existing practice, while it assumes a marginal annual improvement in T&D losses. Under the stated assumptions, the financials of the state utilities and departments are expected to improve when analyzed on the basis of per unit of energy sold. While the per capita energy usage is expected to increase two to three times across the states because of the project, per unit losses are expected to significantly reduce. This impact is because of the fact that after project commissioning, the state utilities and departments would be able to sell more power within the state whereas at assumed T&D losses, the revenue realization would be higher against the no-project scenario. The absolute losses of the utilities and departments at the end of the analysis period (FY24) are expected to be lower in the case of five states and only marginally higher for one state compared to the current losses (base year FY15). The financial losses will follow a trajectory of increasing in the near term (because of lower in-state sales and higher O&M expenses from the project) and reducing over the medium to long term. More details are presented in Annex 5. However, the reduction of the actual losses will be a direct reflection of the commitment of the power utilities and the states to reforms; the more drastic the reforms, the higher the reduction in actual losses, with the caveat that such drastic reforms may not be feasible in the short term.

64. The global environmental impact of the project was assessed using the Bank guidelines for greenhouse gas (GHG) emission of T&D projects. The net emissions reduction from all project investments even under a conservative scenario was assessed to be 1,023,850 tCO_2 equivalent against an assessed baseline figure of 39,239,386 tCO_2 equivalent. Further details on this assessment are available in Annex 5.

B. Technical

65. The project design follows well-proven designs and technologies and replicates established and efficient practices. The project does not pose any particular technical risks, given POWERGRID's demonstrated capabilities in transmission system development and use of proven technologies. POWERGRID, in association with states and under the guidance of the CEA, has designed the overall scheme for the strengthening and augmentation of the transmission, sub-transmission, and distribution network in the NER based on comprehensive planning and

[12] The states may only have the liability for repayment of 5 percent of the project cost (or 10 percent of the Bank loan) through repayment arrangements as may be agreed between the GoI and the states.

appropriate level of system studies, and the overall scheme has been cleared by the CEA. POWERGRID, in its engagement with the Bank, has demonstrated the capacity to implement Bank-financed schemes within agreed costs and time schedules.

C. Financial Management

66. The GoI and POWERGRID will be responsible for the project FM arrangements. The MoP will be borrowing the IBRD loan and passing the funds to POWERGRID, as the IA. The FM arrangements at the MoP will be according to the existing GoI arrangements. The budgeting and accounting procedures for the subject loan to be followed by the MoP shall be according to the General Financial Rules 2005 of the GoI. POWERGRID systems will be used for project accounting and internal control, which will become the basis for the periodic reporting and audit. Disbursement shall be based on quarterly Interim Unaudited Financial Reports (IUFRs). The internal audit of the project will be carried out by an auditing institute or a consultancy firm hired by POWERGRID on a competitive basis according to the criteria acceptable to the Bank. The external audit of the project will be carried out by firms selected by POWERGRID on a competitive basis as per the Terms of Reference (ToRs) agreed with the Bank. POWERGRID is already implementing Bank-funded projects and is well aware of the Bank's fiduciary requirements. POWERGRID will implement the project according to the FM requirements of the Bank's Loan and Project Agreement and as further detailed in the state specific PIPs prepared for each participating state. The FM arrangements agreed for the project are assessed to be adequate to account for and report on sources and uses of project resources and meet Bank's fiduciary requirements. With the FM arrangements indicated above and given POWERGRID's experience in implementation of Bank-funded projects, the FM risk for the project remains Moderate.

D. Procurement

67. Procurement for the project under Component A will be carried out in accordance with the Bank's Procurement Regulations for Borrowers for Goods, Works, Non-Consulting and Consulting Services dated July 1, 2016 and applicable to Investment Project Financing (IPF) hereinafter referred to as "Regulations". The project will be subject to the Bank's Anticorruption Guidelines[13], dated October 15, 2006, and revised in January 2011 and as of July 1, 2016. Procurement of the consultancies to be financed under Component B, which will not be financed out of the proceeds of the loan, will be carried out according to the GoI/ POWERGRID rules.

68. **Procurement risk assessment.** Under the implementation arrangements finalized for the project, the GoI has appointed POWERGRID as the IA to implement the project in close coordination with the respective state power utilities and departments. POWERGRID has signed an Implementation/Participation agreement separately with each of the power utilities and departments of the participating states. As the IA, POWERGRID will be responsible for undertaking all procurements and contract management activities on behalf of the six participating states.

69. The Procurement Risk rating is rated as Moderate. POWERGRID has staff with expertise in procurement and contract management in conducting procurement in accordance with Bank

[13] Guidelines on Preventing and Combating Fraud and Corruption in Projects Financed by IBRD Loans and IDA Credits and Grants

policies and procedures, having successfully handled procurement activities under Bank-funded projects. While the decision-making process and primary responsibility for the successful implementation of the project will rest with POWERGRID, the support and close involvement of state utilities and departments at the local level and the GoI, in particular the MoP and Ministry of DoNER, at the central level will be critical. POWERGRID is recruiting staff to be hired at the regional level and officials on deputation from the state utilities who will be involved in contract management over the implementation period of the project.

70. **e-Procurement system** *(Under Single Stage Two Envelope Bidding procedure)***.** POWERGRID will be using the e-Procurement system for all procurement under the project. The e-Procurement system assessment was carried out against the multilateral development banks' requirements and has been accepted for use for procurement under Bank-funded projects.

71. **Project Procurement Strategy**. As per the requirement of the Regulations, a Project Procurement Strategy Document (PPSD) has been developed, based on which the procurement plan was prepared to set out the selection methods to be followed by the borrower during project implementation in the procurement of goods, works, non-consulting and consulting services financed by the Bank. The Procurement Plan for the project is enclosed in Annex 3.

72. **Advance Procurement.** To meet GoI Readiness Filters for Implementation, POWERGRID has proceeded with initial steps of procurement for about 40 packages, and these are consistent with the Sections I, II and III of the Regulations. The Project Procurement Plan include details of all the contracts to be financed by the Project.

E. Social (including safeguards)

73. India's NER is spread over an expanse of 171,351 km^2. This sparsely populated region is characterized by extraordinary ethnic, cultural, religious, and linguistic diversity, with more than 160 scheduled tribes (STs) (out of 630 in the country) comprising over 400 distinct sub-tribal groups and a large and diverse nontribal population as well. The region is geographically divided into discrete plains and hills and the dichotomy between the hills people (inhabited mostly by tribal people) and the 'plains people' (majority of whom are not tribal people) is quite sharp, rendering the former 'excluded'. Given the terrain, access to different areas and communication are quite difficult. The region has witnessed geopolitical isolation, protracted insurgency in some areas, militarization, and migration affecting socioeconomic development. The project's six states typify the 'region' in all aspects. Tribal population is as high as 94.4 percent in Mizoram, 86.5 percent in Nagaland, 86.1 percent in Meghalaya, 35.1 percent in Manipur, 31.8 percent in Tripura, and as low as 12.4 percent in Assam (Census 2011). Many tribes still retain traditional customs that provide them with an identity as well as a collective control over resources.

74. As a consequence, two major issues assuming significance in the context of the current project are (a) exclusion and (b) vulnerability, which have implications on ensuring 'participation'. These issues are further defined and will be addressed by the following activities and factors: capacity building; information, education, and communication; consultations and negotiations; and transparency and accountability. These aspects are built into the project design as a part of safeguards management, which is central to the project.

75. The Project triggers the following World Bank Safeguards Policies: Involuntary Resettlement OP/BP 4.12 and Indigenous Peoples OP/BP 4.10. Major social safeguard aspects relate to land and tribal people. The project does require lands for the (a) erection of poles to draw lines and (b) construction of T&D substations. The former does not entail permanent acquisition of lands, but creates some temporary disturbances, thereby demanding a Compensatory Plan for Temporary Damages (CPTD). The latter, however, does require land on a permanent basis. In the NER, land tenure is quite unique. Land could be owned privately either by individuals or by the 'village'. Additionally, customary rights may also prevail on forest lands. Proper land titles may or may not exist in all the cases. Further, many of the non-title lands, especially in the hill areas, may belong to tribal people. So, interventions to secure land in the hill areas will have to be necessarily associated with an interface with the tribal people.

76. To ensure compliance with the policies concerning safeguards management, the project has adopted a framework approach as all the investments have not yet been identified. Therefore, each of the six participating states prepared an Environment and Social Policy and Procedures Framework (ESPPF) document which is a generic document that serves as a framework and can be adopted for all T&D projects of the state. Essentially, the state-specific ESPPF preparation is based on POWERGRID's Environment and Social Policy and Procedures (ESPP), which has been reviewed and accepted by the Bank for Use of Borrower Systems[14] and incorporates due requirements of India's new 'The Right to Fair Compensation in Land Acquisition, Resettlement and Rehabilitation Act, 2013' (LARR Act) as well as Indian Constitution's Sixth Schedule provision related to protecting the interest of the tribal people in the NER.

77. The ESPPF's social content embodies a synthesis of the Resettlement Policy Framework (RPF) (according to OP 4.12) and a Tribal People Development Planning Framework (TPDPF) (according to OP 4.10). In cases where land is to be acquired and/or there are tribal peoples in the subproject area, the framework will be adopted and a Social Assessment (SA) will be carried out to enable preparation of an RAP and/or TPDP, where applicable. The ESPPF lays down the modalities for undertaking the SA as well as the preparation and implementation of the RAP and TPDPs. However, at the same time, two of the participating states (Nagaland and Mizoram) enjoy special constitutional safeguards and the LARR Act of 2013 may not be applicable till such time the respective states endorse national legislation. Therefore, in case the LARR Act has not been endorsed by the time of implementation, use of land will have to be secured through either voluntary donations or outright purchases based on negotiations with the land owners. Measures have been described in the ESPPF to ensure that such transactions are voluntary and not subject to any external pressures.

78. At appraisal stage, it was envisaged that 118 transmission and distribution substations would be built as part of the first set of subprojects. Of these, land is available with the power utility or department in two states—Tripura and Mizoram for all the 47 substations. Of the remaining states, land is available for 43 substations and land remains to be secured for 28 substations. Strategies for securing lands, wherever essential, are elaborated in the ESPPF. With regard to OP 4.10, the Bank's policy on Indigenous Peoples, three states—Meghalaya, Mizoram and Nagaland—are actually 'tribal,' as most residents are tribal people. Similarly, in Manipur and Tripura, most investments are being made in the tribal areas. In Assam, tribal people may also be

[14] Report No. 49022-IN, Project Appraisal Document, Fifth Power System Development Project, August 25, 2009

a minority in certain subprojects. Considering this varied situation with respect to the presence of tribal peoples in the project area, a Tribal People Development Planning Framework (TPDPF) has been prepared.

79. **Gender.** As part of project preparation, a gender analysis was undertaken. The status of women in the NER is reportedly better with respect to some human development indicators than the status of women in the rest of India.[15] However, contradictions do occur within each state. For example, the female to male ratio is high in the states of the NER, implying that there are more females than males. Yet, the infant mortality rate for females is high (in Assam). Similarly, the literacy rate is high but at the same time there is a high dropout rate. In Assam and Nagaland, the female literacy levels are above average and the gap in literacy levels is strikingly low; however, enrolment rates for girls are lower than that of the national average. High female employment rate in the NER may indicate only meeting 'practical gender needs' (for example, provision of water, health care, employment, and so on.) but not necessarily so in the case of strategic needs. The latter could especially lead to poor representation and participation of women in decision making, rendering them seriously affected.

80. Under the project, gender actions are envisaged at two levels. First, at the project level, through capacity building to ensure that the staff have the necessary capacity to identify and integrate gender issues in the subproject cycle. Second, at the community level, evincing participation and designating interventions as appropriate. The former relates to (a) capacity building of the staff so as to be effective in reaching out to the communities, in general, and women, in particular, and be engaged in consultations and contribute toward undertaking the SA and preparation of the CPTD, RAP, and TPDPs and (b) facilitating the implementation as well as monitoring the plans. At the community level, efforts will be made by the project to provide a conducive environment for all women, particularly female-headed households, to participate in consultations and express their requirements. All field-level plans shall necessarily have an exclusive section on 'gender', detailing actions for addressing such requirements. The M&E arrangement provides for a gender related indicator.

81. **Citizen engagement.** The states and POWERGRID are committed to ensure engagement of citizens in the management of the project as it paves the way for (a) legitimacy in decision making; (b) designing of the appropriate interventions; (c) effective institutional and implementation arrangements; (d) enhancing inclusion, reducing conflicts, and establishing common platforms for sharing of knowledge and concerns as well as justice, liberty, and dignity; (e) local-level capacity building leading to responsible and responsive citizenry; (f) better-quality outcomes; and (g) downward accountability. In effect, the project is expected to contribute to better service delivery and sustainable impacts as a result of the engagement. Keeping these purposes in mind, the project has inbuilt mechanisms for ensuring citizen engagement. The key citizen engagement elements enshrined in the project design are (a) SA-centered consultations with all the relevant stakeholders; (b) moving beyond consultations into consent in the tribal areas; (c) external bodies overseeing the conducting of SAs and Social Impact Management Plan (SIMPs); (d) sharing of all the plans and engaging in extensive discussions and deliberations with all the stakeholders, especially project-affected persons (PAPs) and incorporating the feedback into adjusting the implementation, as

[15] http://www.ijsrp.org/research-paper-1301/ijsrp-p1322.pdf.

deemed appropriate; (e) multilayers of grievance redressal arrangements ensuring appropriate receipt and processing of complaints from citizens and PAPs as well as initiating actions, if need be, on any generic issue raised by them; and (f) full adoption of the country's Right to Information Act. The M&E arrangement provides for indicators reflecting on citizen engagement.

F. Environment (including Safeguards)

82. The North Eastern states of India have a relatively pristine environment. The forest area is higher than the national average and exceeds the goal of 33 percent of geographical area set in the National Forest Policy. The latest assessment of forest cover indicates that forest area in Assam is 35.28 percent; in Manipur, it is 76.1 percent; in Meghalaya, it is 77.08 percent; in Mizoram, it is 90.38 percent; in Nagaland, it is 78.68 percent; and in Tripura, it is 75.01 percent.[16] These six states contribute to over 14.25 percent of India's tree and forest cover. India's NER is also a part of a global biodiversity hotspot and recognizing this, several protected areas have been created in each state —national parks, wildlife sanctuaries, and community reserves. They protect a variety of flora and fauna—from Hoolock Gibbon to Trogopan. In addition to the protected areas, there are other important areas for biodiversity and wildlife such as elephant migration and bird migration routes. Several important wetlands in the NER are on the List of Wetlands of International Importance, under the Convention on Wetlands, commonly known as the Ramsar convention.

83. These forests are owned, managed, and used in a number of combinations—some by the State Forest Departments, some by the community living in the areas, and some are also private forests. There is a tradition of recognizing some areas of forests/plantations as sacred groves, which is most commonly observed in Manipur and Meghalaya.

84. This is an Environmental Category A project. The Project triggers the following World Bank Safeguards Policies: Environmental Assessment OP/BP 4.01; Natural Habitats OP/BP 4.04; Forests OP/BP 4.36; and Physical Cultural Resources OP/BP 4.11.

85. The terrain in the NER is mostly hilly, with the notable exception of Assam and Tripura and some parts of Manipur. The stability of slopes when disturbed by cutting and/or filling for installation of towers or substations can pose a risk of increased erosion or sedimentation downstream, if not properly protected.

86. Potential impacts on these are likely because of land being used for tower or pole installation and for construction of substations during project implementation. The land being used can vary from just over 1 m^2 for individual poles, increasing to 225 m^2 for 220 kV towers and may be as much as over 10 acres for large substations. The key issues to be handled during project implementation, in addition to the drainage, include removal of trees and vegetation and the incidental increase in vulnerability of wildlife dependent on these, safety of workers as well as residents of areas close to the project activities, chance finds of important cultural assets, and the potential of obstruction to movement of fauna in the project area.

87. The O&M of the substations in the states may need to be modernized for handling issues such as chemicals management—notably handling transformer oil, and Sulfur Hexafluoride (SF_6).

[16] Forest Survey of India. 2013. *India State of Forest Report 2013*. Dehradun: Forest Survey of India, Ministry of Environment, Forests and Climate Change, Government of India.

POWERGRID has already adequately handled these issues in the past and under the project, it is anticipated that they will adequately train the personnel of the states' utilities in that regard.

88. In most cases, transmission schemes have relative flexibility for siting individual towers and substations within an area to be serviced. This makes management of location-specific issues easier than for many other infrastructure interventions. However, given the geographical spread and environmental and social sensitivity of the area as well as the need for a uniform approach to handling risks, POWERGRID has assisted the states to prepare and adopt state-specific ESPPFs, in line with OP 4.01 on Environmental Assessment, which serves as a management framework for managing adverse impacts on the environment. It also includes measures to handle issues relating to natural habitats (OP 4.04); forests (OP 4.36), though no commercial logging is to be undertaken, but the interventions could affect health of forests; and physical cultural resources (OP 4.11). Managing potential adverse and beneficial impacts on these important areas and resources is a key objective of the ESPPF in each participating state.

89. In line with the respective state's ESPPF, each identified subproject will be assessed for environmental impacts in an Initial Environmental Assessment Report (IEAR), which will include the assessment based on the information available before the check surveys to be undertaken by the contractor. It will specify the measures to be taken to manage any anticipated adverse environmental impacts and assign the responsibility for monitoring these and reporting regarding the progress in implementation of these measures over the implementation period.

90. The ESPPFs also require the preparation of a Final Environmental Assessment Report (FEAR) for each subproject, which will confirm the extent to which the originally envisaged measures have been implemented, compliance with the conditions imposed as part of statutory clearances such as under the Forest (Conservation) Act, and other aspects such as expenditure incurred for environmental management. Unless otherwise agreed with the Bank, POWERGRID will engage independent consultants with relevant qualifications and experience for preparation of the FEAR.

91. The individual states' ESPPF reflect their own circumstances, and minor modifications have been made to ensure that the relevant regulations—both state-specific and some national requirements that have changed since the last IBRD approved loan for POWERGRID, namely the Fifth Power System Development Project—are reflected in the finalized state-specific ESPPF documents. In addition, given the sensitive location, it has been agreed that the biodiversity assessments may be carried out where appropriate even outside those areas that have been recognized for legal protection. Other new features include the provision of bioengineering for slope protection in the case of substation locations where such protection is required and possible.

92. Consultations are integral to the ESPPF preparation and the subsequent processes to identify and manage impacts of the individual subprojects supported under the project. Stakeholder consultations were held on the draft ESPPF documents in each state to obtain diverse perspectives on how to manage these important issues and have been addressed in the finalized ESPPF document for each state. The ESPPFs also specify how potentially affected people and other stakeholders such as line departments will be consulted for individual subprojects during project preparation and implementation.

93. With regard to preparedness of environment safeguard instruments, the final ESPPF for Tripura has been disclosed at Bank's InfoShop on June 17, 2015; for Meghalaya, on June 23, 2015; for Manipur, on August 17, 2015; for Assam, on June 29, 2015; for Nagaland, on July 10, 2015; and for Mizoram, on July 7, 2015. The ESPPFs in all six states have been finalized after a state-level public consultation in each state and have also been disclosed in-country on the utilities/state government/POWERGRID website as well. Further, as of May 23, 2016, 18 IEARs covering subprojects across the six participating states under this project have already been reviewed and cleared for disclosure and subsequently disclosed on the utilities/state government/POWERGRID website as well as the Bank's InfoShop. The IEARs are also being made available at project offices for reference. All environmental safeguard documents will be disclosed before award of contracts.

G. World Bank Grievance Redress

94. Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/GRS. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

ANNEX 1: RESULTS FRAMEWORK AND MONITORING

India

North Eastern Region Power System Improvement Project (P127974)

Results Framework

Project Development Objectives

PDO Statement

The proposed project development objective (PDO) is to increase the delivery of electricity at the boundaries of the power distribution network in the participating states in the North Eastern Region.

These results are at	Project Level

Project Development Objective Indicators

Indicator Name	Baseline	Cumulative Target Values								
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	End Target
Amount of electricity delivered at the boundaries of the power distribution network in each state (Gigawatt-hour (GWh))	12,372	13,238	14,165	14,609	15,881	16,483	17,211	17,871	18,370	18,370
Increase in transformation capacity (Kilovolt-Amphere (KVA)) of the power T&D networking in each state	0	0	0	567,000	1,758,000	3,564,000	5,144,000	5,550,000	5,672,000	5,672,000

Intermediate Results Indicators

Indicator Name	Baseline	Cumulative Target Values								
		YR1	YR2	YR3	YR4	YR5	YR6	YR7	YR8	End Target
Transmission lines constructed or rehabilitated under the project (Kilometers) - (Core)	0.00	0.00	0.00	212.00	655.00	1328.00	1916.00	2050.00	2114.00	2114.00
Transmission lines rehabilitated under the project (Kilometers - Sub-Type: Breakdown) - (Core)	0.00	0.00	0.00	21.00	64.00	130.00	187.00	200.00	207.00	207.00
Transmission lines constructed under the project (Kilometers - Sub-Type: Breakdown) - (Core)	0.00	0.00	0.00	191.00	591.00	1198.00	1729.00	1850.00	1907.00	1907.00
Distribution lines constructed or rehabilitated under the project (Kilometers) - (Core)	0.00	0.00	0.00	203.00	629.00	1277.00	1843.00	1960.00	2031.00	2031.00
Distribution lines constructed under the project (Kilometers - Sub-Type: Breakdown) - (Core)	0.00	0.00	0.00	164.00	508.00	1031.00	1488.00	1580.00	1640.00	1640.00
Distribution lines rehabilitated under the project	0.00	0.00	0.00	39.00	121.00	246.00	355.00	380.00	391.00	391.00

(Kilometers - Sub-Type: Breakdown) - (Core)										
Number of distribution substations constructed/ upgraded (Number)	0.00	0.00	0.00	9.00	26.00	53.00	77.00	80.00	85.00	85.00
Number of transmission substations constructed/upgraded (Number)	0	0	0	0	6	17	23	28	33	33
Number of practice/process manuals updated or developed (procurement, O&M, financial management, human resource, and so on) (Number)	0	0	0	1	2	3	4	5	6	6
Person-days of utility staff participating in trainings across areas like technical, operational, commercial, financial, HR, environment, social, procurement, change management, and so on (Number)	0	50	100	300	450	600	900	1,200	1,500	1,650
Percentage of females among the number of persons	0.00	5.00	10.00	10.00	15.00	15.00	20.00	22.50	25.00	25.00

participating in the safeguard consultation meetings (percentage)										
Grievances received that are addressed within two months of receipt (percentage)	0.00	10.00	15.00	25.00	35.00	50.00	65.00	75.00	90.00	90.00

Indicator Description

Project Development Objective Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Increase in transformation capacity of the power T&D networking in each state	This indicator measures the cumulative increase in transformation capacity within the participating states.	Annual	Progress reports	Implementing agency
Amount of electricity delivered at the boundaries of the power distribution network in each state	This indicator measures the total amount of electricity that will be delivered by the transmission system of six participating states at the boundary of the power distribution network in each state during the FY.	Annual	Reports of the CEA, state utility reports, North Eastern Region Load Dispatch Centre reports	Implementing agency and state power utilities

Intermediate Results Indicators

Indicator Name	Description (indicator definition etc.)	Frequency	Data Source / Methodology	Responsibility for Data Collection
Transmission line constructed or rehabilitated under the project	This indicator measures the length of the transmission line constructed or rehabilitated/upgraded under the project.	Annual	Progress report	Implementing agency
Transmission line rehabilitated under the project	This indicator measures the length of the transmission line rehabilitated/upgraded under the project.	Annual	Progress report	Implementing agency
Transmission line constructed under the project	This indicator measures the length of the transmission line constructed under the project.	Annual	Progress report	Implementing agency

Distribution lines constructed or rehabilitated under the project	This indicator measures the length of the distribution lines constructed or rehabilitated/upgraded under the project. The baseline value for this indicator is expected to be zero.	Annual	Progress report	Implementing agency
Distribution lines constructed under the project	This indicator measures the length of the distribution lines constructed under the project.	Annual	Progress report	Implementing agency
Distribution lines rehabilitated under the project	This indicator measures the length of the distribution lines rehabilitated/upgraded under the project.	Annual	Progress report	Implementing agency
Number of distribution substations constructed/ upgraded	This indicator measures the number of (33/11 kV) substations constructed or rehabilitated under the project.	Annual	Progress reports	Implementing agency
Number of transmission substations constructed/ upgraded	This indicator measures the number of transmission substations (220/132 kV, 132/33 kV) constructed or upgraded under the project.	Annual	Progress report	Implementing agency
Number of practice/process manuals updated or developed (procurement, O&M, financial management, human resource, and so on)	This indicator measures the number of practice or process manuals updated or developed across different functional areas of the entity, following the work done under the technical assistance component (100 percent funded by the GoI) for state power utilities or departments.	Annual	Progress report	Implementing agency and state power utilities
Person-days of utility staff participating in trainings across areas like technical, operational, commercial, financial, HR, environment, social, procurement, change management, and so on	This indicator measures the person-days of utility staff in the participating states trained (local/foreign training including study tours) across different areas under the technical assistance component (100 percent funded by the GoI) of the project.	Annual	Progress report	Implementing agency and state power utilities
Percentage of females among the number of persons participating in the safeguard consultation meetings	This indicator measures the percentage of females among the number of persons participating during the consultations for preparation/ implementation of safeguard plans like the SIMP and/or the CPTD.	Annual	Progress reports	Implementing agency and state power utilities

Grievances received that are addressed within two months of receipt (percentage)	This indicator measures the grievances/complaints received and percentage addressed within a period of two months from the date of receipt.	Annual	Progress reports	Implementing agency and state power utilities

ANNEX 2: DETAILED PROJECT DESCRIPTION

India: North Eastern Region Power System Improvement Project (P127974)

1. The origins of the project lie in the first sectoral summit of the North Eastern Council (NEC) to review power sector programs in the NER held in Pasighat in January 2007. The 'Pasighat Proclamation on Power' included one of the key priorities as "the development of the intrastate transmission and sub-transmission system to ensure that the growing and diversified demands for power for the economic development of the NER are met." Subsequently, the MoP set up a subgroup under the chairmanship of the CEA on the recommendations of which a comprehensive scheme was formulated by the GoI to strengthen the interstate and intrastate transmission and sub-transmission infrastructure in the region.

2. The overall scheme formulated by the GoI broadly covers (a) the strengthening and augmentation of interstate and intrastate transmission, sub-transmission, and distribution network in the NER to facilitate increased delivery of power and (b) development of institutional capacity of the power utilities and state power departments.

3. To support this scheme, the GoI requested Bank support to provide financing for a part of the broader scheme, covering the strengthening of the intrastate T&D network and building institutional capacity of power utilities and departments in six states (Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura)[17] in the region.

4. The project aims to improve the availability of electricity supply through expansion and reinforcement of intrastate power T&D systems in six states in the NER, primarily down to the 33 kV level.

5. The T&D network within the six participating states in the NER is managed by the respective state power utility and department in each state: the AEGCL for transmission and the APDCL for distribution in Assam; the MePTCL for transmission and the MePDCL for distribution in Meghalaya; the MSPCL for generation and transmission and the MSPDCL for distribution in Manipur; the TSECL for T&D in Tripura; the PEDM in Mizoram; and the DPN in Nagaland. The power utilities and department in the NER supply power into their respective state network using interstate TLs/grid owned by POWERGRID, which is interconnected to the state's network at particular points.

6. A brief snapshot of the power sector in each state is provided in the following paragraphs.

7. **Assam.** The state has an area of 78,438 km^2 with 27 districts. According to Census 2011, the state has a population of 31,205,576 and 85.9 percent of the population lives in rural areas. In 2004, the erstwhile Assam State Electricity Board was unbundled and corporatized. At present, the state has three utilities to undertake the different functions related to the power sector: the Assam Power Generation Corporation Limited is the entity responsible for generation of electricity in the state; the AEGCL is the entity responsible for transmission of electricity as the State

[17] The scheme for the other two states in the NER is being fully funded by the GoI.

Transmission Utility; and the APDCL is the entity responsible for distribution of electricity in the state. The sector is regulated by the Assam Electricity Regulatory Commission since 2006.

8. The state has the largest transmission network among the states in the NER with TLs at 220 kV, 132 kV, and 66 kV voltage levels. According to Census 2011, the state has an overall household electrification rate of 37 percent, with 28.4 percent access levels in rural areas and 84.1 percent access levels in urban areas. The APDCL has a consumer base of 2,772,212 (FY14) with a connected load of 4,353 MW and overall sales of 5,476 million units (MUs) in FY15. The APDCL has around 56.7 percent domestic (residential) consumers with a 38.9 percent share of sales, followed by 34.1 percent Jeevan Dhara (lifeline tariff) consumers with a 6.9 percent share of sales, followed by 6.8 percent commercial consumers with a 13.3 percent share of sales. Annual per capita consumption in the state is 220 kWh (FY15) compared to an all-India average of 1,010 kWh (FY15). Peak demand met in the state in FY15 was 1,257 MW and energy availability was 8,272 MUs. The state faced a peak deficit of 13.3 percent and an energy deficit of 7.0 percent on restricted demand in FY15. According to the 18th Electric Power Survey of the CEA, the future demand in the state is expected to grow to about 1,817 MW by FY17 and to around 2,534 MW by FY22.

Figure 2.1. Assam: Energy Requirement/Demand (restricted) vs Energy Availability

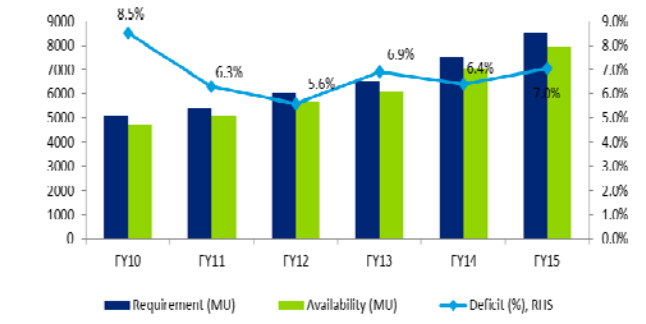


Figure 2.2. Assam: Peak Demand (restricted) vs Peak Availability

Figure 2.3. Assam: Estimated Future Trend of Growth in Demand

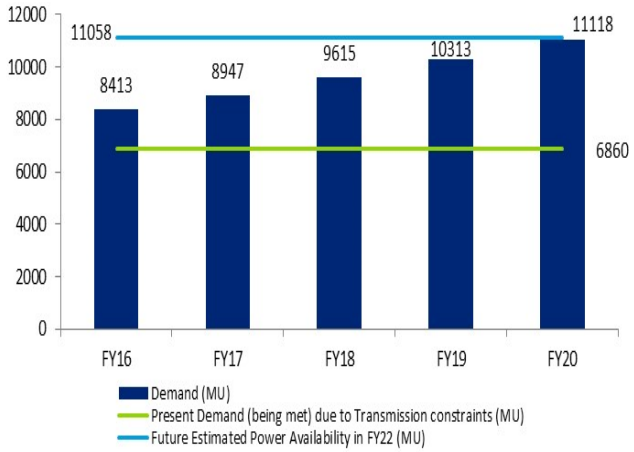
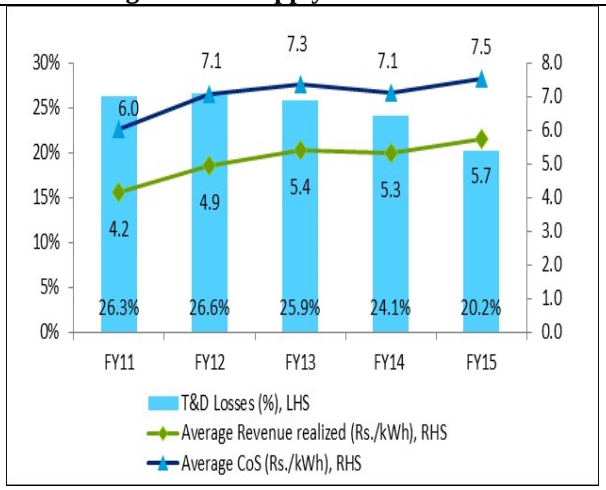


Figure 2.4. Assam: T&D Losses, Average Realization and Average Cost of Supply



RHS (Right Hand Side) LHS (Left Hand Side)

Source: CEA reports, state's regulatory filings, and Bank analysis

9. **Manipur.** The state has an area of 22,327 km^2. According to Census 2011, the state has a population of 2,855,794 and 70.8 percent of the population in the state lives in rural areas. In 2014, the erstwhile integrated PEDM was unbundled and corporatized into the MSPCL, as the holding company as well as the entity responsible for generation and transmission of electricity, and the MSPDCL as the entity responsible for distribution of electricity in the state of Manipur. The sector is regulated by the JERC for the states of Manipur and Mizoram since 2008.

10. The state has a transmission network with TLs at 132 kV. According to Census 2011, the state has an overall household electrification rate of 68.3 percent, with 61.2 percent access levels in rural areas and 82.4 percent access levels in urban areas. The MSPDCL has a consumer base of 258,484 (FY15), with a connected load of 451 MW and overall sales of 442 MUs in FY15. The MSPDCL has around 84.4 percent domestic (residential) consumers with a 55.2 percent share of sales, followed by 9.5 percent Kutir Jyoti (lifeline tariff) consumers with a 2.9 percent share of sales and 4.7 percent commercial consumers with a 8.1 percent share of sales. Annual per capita consumption in the state is 267 kWh (FY15) compared to the all-India average of 1,010 kWh (FY15). Peak demand met in the state in FY15 was 146 MW and energy availability was 678 MUs. The state faced a peak deficit of 2.7 percent and an energy deficit of 3.8 percent on restricted demand in FY15. According to the 18th Electric Power Survey of the CEA, the future demand in the state is expected to grow to about 346 MW by FY17 and to around 497 MW by FY22.

Figure 2.5. Manipur Energy Requirement/Demand (restricted) vs Energy Availability

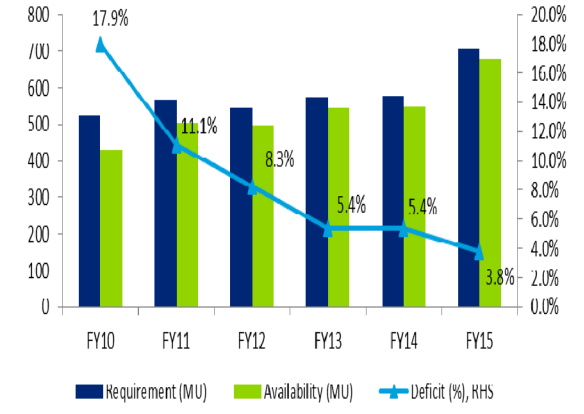


Figure 2.6. Manipur: Peak Demand (restricted) vs Peak Availability

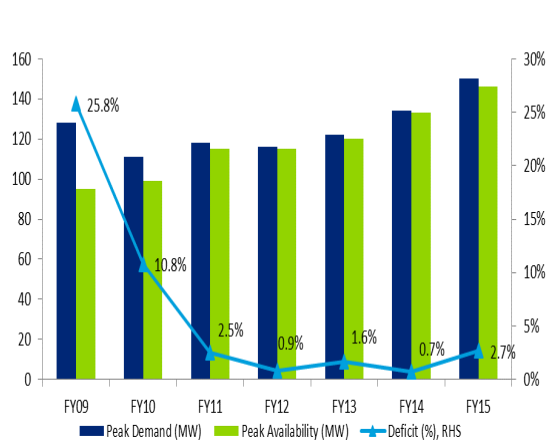


Figure 2.7. Manipur: Estimated Future Trend of Growth in Demand

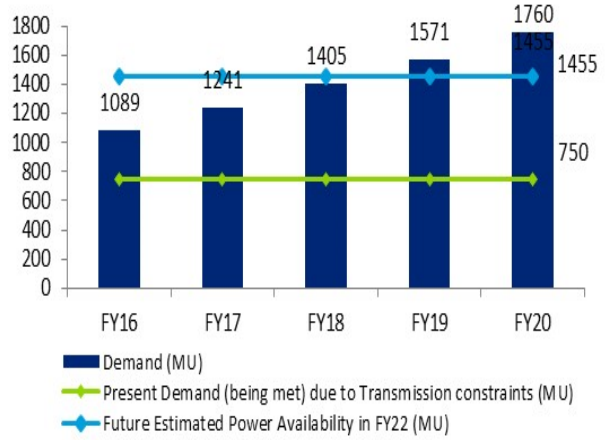
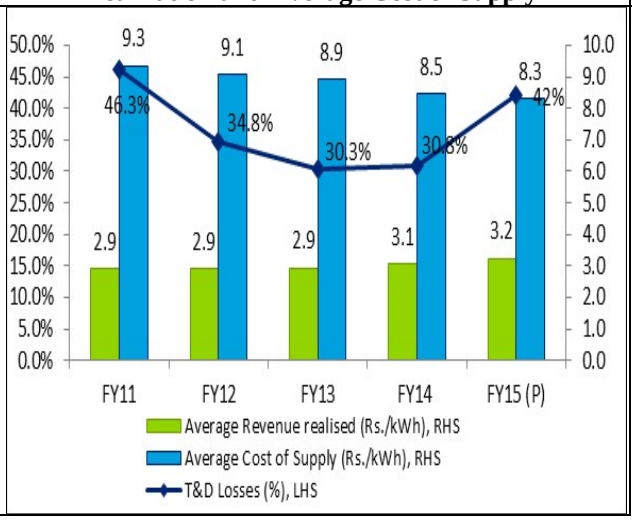


Figure 2.8. Manipur: T&D Losses, Average Realization and Average Cost of Supply



Source: CEA reports, state's regulatory filings, and Bank analysis

11. **Meghalaya.** The state has an area of 22,429 km^2. According to Census 2011, the state has a population of 2,966,889 and 79.9 percent of the population in the state lives in rural areas. The power sector in the state of Meghalaya is unbundled and corporatized with four entities: Meghalaya Energy Corporation Limited is the holding company; Meghalaya Power Generation Corporation Limited is the entity responsible for generation of electricity in the state; the MePTCL is the entity responsible for transmission of electricity in the state and the MePDCL is the entity responsible for distribution of electricity in the state. The sector is regulated by the Meghalaya State Electricity Regulatory Commission since 2006.

12. The state has the second largest transmission network among the states in the NER, with TLs at 400 kV, 220 kV, and 132 kV voltage levels. According to Census 2011, the state has an overall household electrification rate of 60.9 percent, with 51.6 percent access levels in rural areas and 94.9 percent access levels in urban areas. The MePDCL has a consumer base of 350,303 (FY14) with a connected load of 741 MW and overall sales of 996.6 MUs in FY15. The MePDCL has around 76 percent domestic (residential) consumers with a 37.9 percent share of sales, followed by 17 percent Kutir Jyoti (lifeline tariff) consumers with 2.2 percent share of sales, 7.7 percent commercial consumers with a 6.5 percent share of sales. Annual per capita consumption in the state is 510 kWh (FY15) compared to an all-India average of 1,010 kWh (FY15). Peak demand met in the state in FY15 was 367 MW and energy availability was 1,634 MUs. The state faced a peak deficit of 0.8 percent and an energy deficit of 15.3 percent on restricted demand in FY15. According to the 18th Electric Power Survey of the CEA, the future demand in the state is expected to grow to about 445 MW by FY17 and to 596 MW approximately by FY22.

Figure 2.9. Meghalaya: Energy Requirement/Demand (restricted) vs Energy Availability

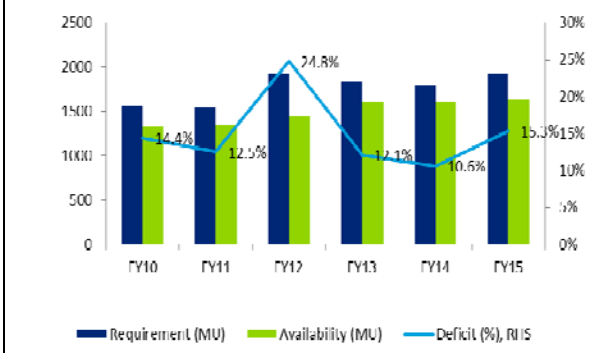


Figure 2.10. Meghalaya: Peak Demand (restricted) vs Peak Availability

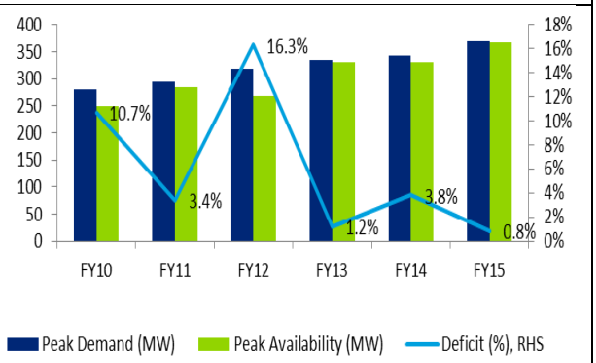


Figure 2.11. Meghalaya: Estimated Future Trend of Growth in Demand

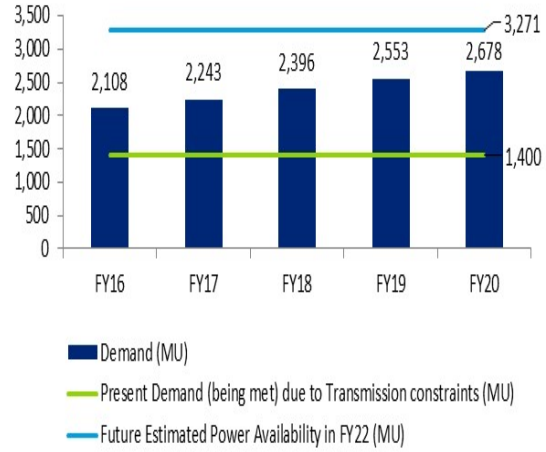
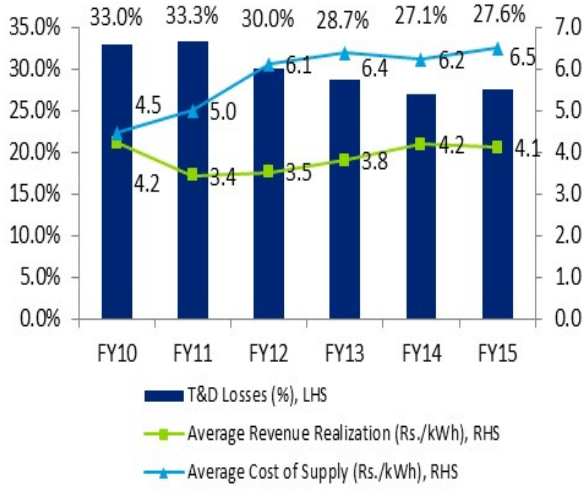


Figure 2.12. Meghalaya: T&D Losses, Average Realization and Average Cost of Supply



Source: CEA reports, state's regulatory filings, and Bank analysis

13. **Mizoram.** The state has an area of 21,087 km^2. According to Census 2011, the state has a population of 1,097,206 and 47.9 percent of the population in the state lives in rural areas. The PEDM, a state government department, is the entity responsible for generation and T&D of electricity in the state of Mizoram. The sector is regulated by the JERC for the states of Manipur and Mizoram since 2008.

14. The state has a transmission network with TLs at 132 kV voltage level. According to Census 2011, the state has an overall household electrification rate of 84.2 percent, with 68.8 percent access levels in rural areas and 98.1 percent access levels in urban areas. The PEDM has a consumer base of 205,084 (FY15), with a connected load of 335 MW and overall sales of 333.9 MUs in FY15. The PEDM has around 96 percent domestic (residential) consumers with a 61 percent share of sales, followed by 3.5 percent commercial consumers with a 7 percent share of sales. Annual per capita consumption in the state is 417 kWh (FY15) compared to an all-India average of 1,010 kWh (FY15). Peak demand met in the state in FY15 was 88 MW and energy availability was 425 MUs. The state faced a peak deficit of 2.2 percent and an energy deficit of 6.6 percent on restricted demand in FY15. According to the 18th Electric Power Survey of the CEA,

the future demand in the state is expected to grow to about 285 MW by FY17 and to around 352 MW by FY22.

Figure 2.13. Mizoram: Energy Requirement/Demand (restricted) vs Energy Availability

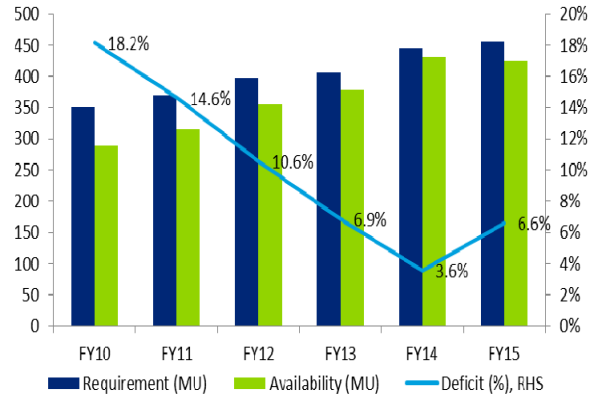


Figure 2.14. Mizoram: Peak Demand (restricted) vs Peak Availability

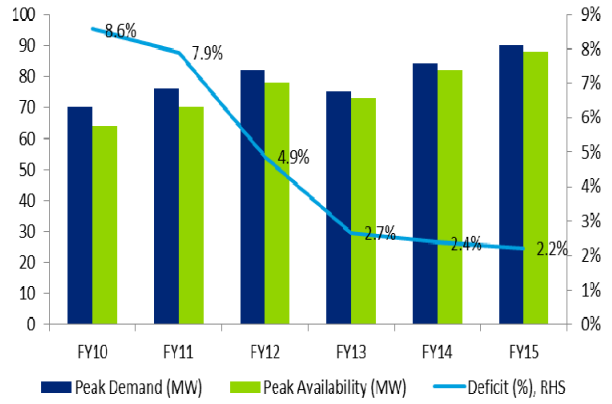


Figure 2.15. Mizoram: Estimated Future Trend of Growth in Demand

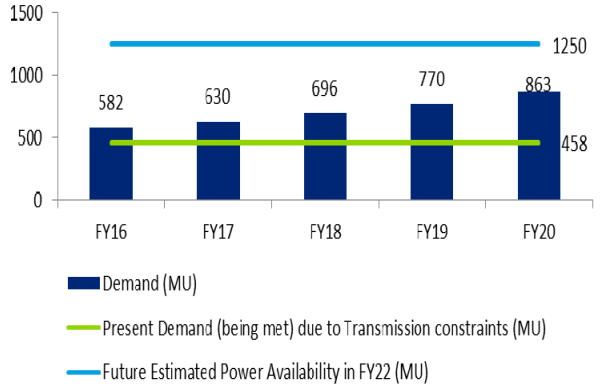
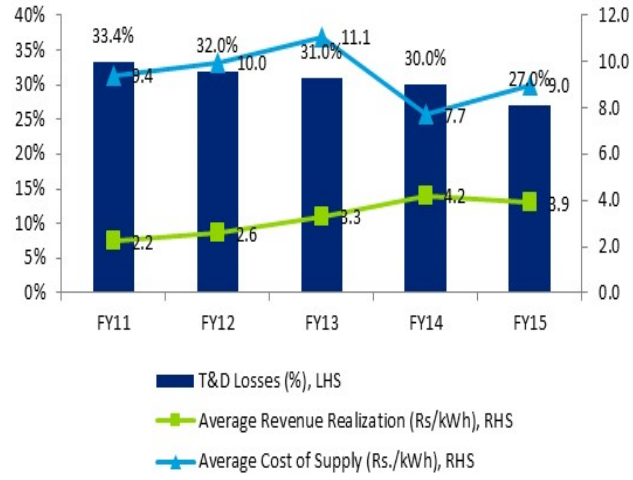


Figure 2.16. Mizoram: T&D Losses, Average Realization and Average Cost of Supply



Source: CEA reports, state's regulatory filings, and Bank analysis

15. **Nagaland.** The state has an area of 16,579 km^2. According to Census 2011, the state has a population of 1,978,502 and 71.1 percent of the population in the state lives in rural areas. The DPN, a state government department, is the entity responsible for generation and T&D of electricity in the state of Nagaland. The sector is regulated by the Nagaland Electricity Regulatory Commission since 2008.

16. The state has a transmission network with TLs at 132 kV and 66 kV voltage levels. According to Census 2011, the state has an overall household electrification rate of 81.6 percent, with 75.2 percent access levels in rural areas and 97.4 percent access levels in urban areas. The DPN has a consumer base of 232,211 (FY15) with an overall sales of 522 MUs in FY15. The DPN has around 90 percent domestic (residential) consumers with a 57.2 percent share of sales, followed by 8.3 percent commercial consumers with a 12.4 percent share of sales. Annual per

capita consumption in the state is 350 kWh (FY15) compared to an all-India average of 1,010 kWh (FY15). Peak demand met in the state in FY15 was 128 MW and energy availability was 661 MUs. The state faced a peak deficit of 8.6 percent and an energy deficit of 3.9 percent on restricted demand in FY15. According to the 18th Electric Power Survey of the CEA, the future demand in the state is expected to grow to about 185 MW by FY17 and to around 271 MW by FY22.

Figure 2.17. Nagaland: Energy Requirement/Demand (restricted) vs Energy Availability

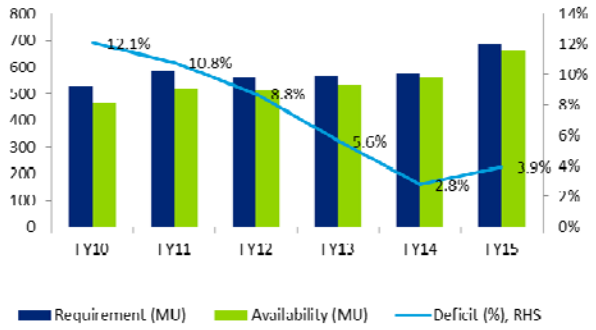


Figure 2.18. Nagaland: Peak Demand (restricted) vs Peak Availability

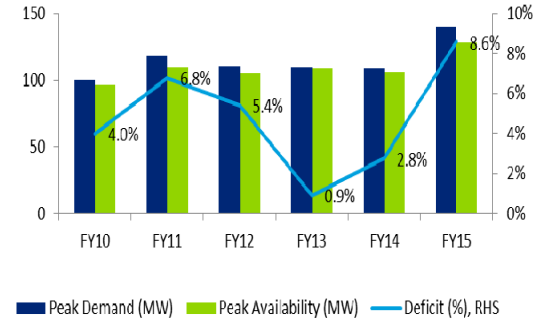


Figure 2.19. Nagaland: Estimated Future Trend of Growth in Demand

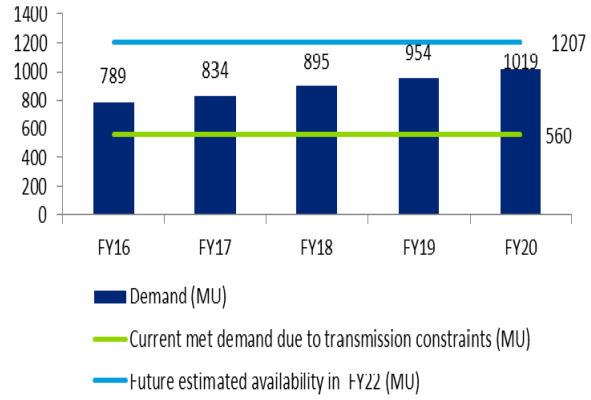
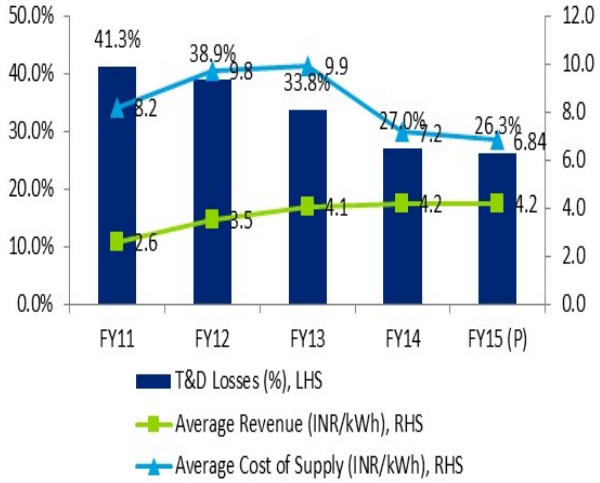


Figure 2.20. Nagaland: T&D Losses, Average Realization and Average Cost of Supply



Source: CEA reports, state's regulatory filings, and Bank analysis

17. **Tripura.** The state has an area of 10,491 km^2. According to Census 2011, the state has a population of 3,673,917 and 73.8 percent of the population in the state lives in rural areas. The TSECL, a government of Tripura enterprise (state-owned utility), is the entity responsible for generation and T&D of electricity in the state of Tripura. The sector is regulated by the Tripura Electricity Regulatory Commission since 2004.

18. The state has the transmission network with TLs at 132 kV and 66 kV voltage levels. According to Census 2011, the state has an overall household electrification rate of 68.4 percent, with 59.5 percent access levels in rural areas and 91.6 percent access levels in urban areas. The TSECL has a consumer base of 608,441 (FY14) with a connected load of 432 MW and overall sales of 786 MUs in FY15. The TSECL has around 78 percent domestic (residential) consumers

with a 52.4 percent share of sales, followed by 11 percent Kuthir Jyoti (lifeline tariff) consumers with a 2.4 percent share of sales and 8 percent commercial consumers with a 9 percent share of sales. Annual per capita consumption in the state is 306 kWh (FY15) compared to an all-India average of 1,010 kWh (FY15). Peak demand met in the state in FY15 was 266 MW and energy availability was 1,048 MUs. The state faced a peak deficit of 16.5 percent and an energy deficit of 15.6 percent on restricted demand in FY15. According to the 18th Electric Power Survey of the CEA, the future demand in the state is expected to grow to about 340 MW by FY17 and to around 472 MW by FY22.

Figure 2.21. Tripura: Energy Requirement/Demand (restricted) vs Energy Availability

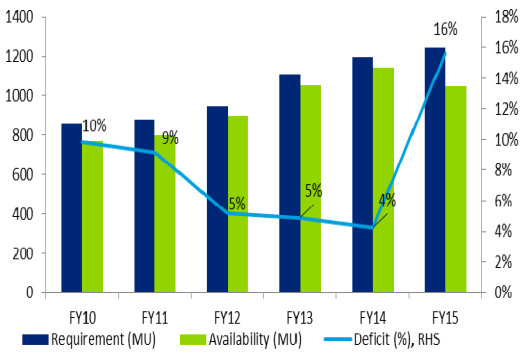


Figure 2.22. Tripura: Peak Demand (restricted) vs Peak Availability

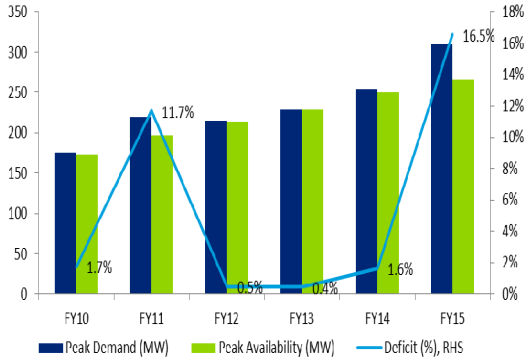


Figure 2.23. Tripura: Estimated Future Trend of Growth in Demand

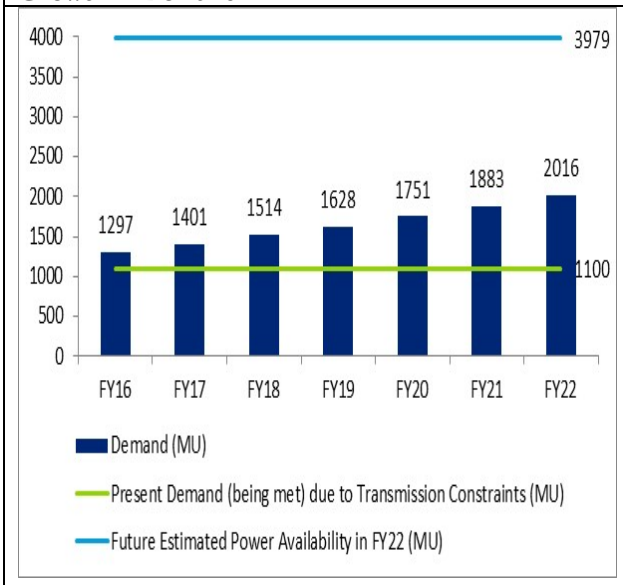
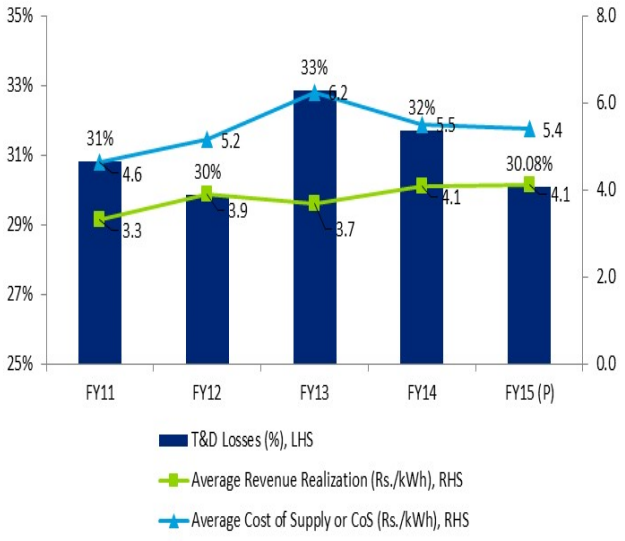


Figure 2.24. Tripura: T&D Losses, Average Realization and Average Cost of Supply



Source: CEA reports, state's regulatory filings, and Bank analysis

19. All the six NER states participating in the project plan to meet their growing demand for electricity through the different generation projects that are already under implementation in the NER. The present intrastate transmission system in these states is mostly quite old and inadequate and unable to cater to the growing power requirements of the states. Further, the present network

is also inadequate in its reach and because of non-availability of adequate redundancy in the network, outage of any transmission system element results in long-term power shortages, making the system highly unreliable. Besides, some network elements occasionally undergo long outages because of breakdowns.

20. Presently, all the six NER states are connected to the transmission network mainly at 132 kV and below. The 33 kV system is the backbone of the power distribution system in the six NER states. To reduce the gap between the requirement and availability of the intrastate T&D system, it is necessary to provide 132 kV/220 kV connectivity to all the six NER states for proper voltage management and lower distribution losses. Similarly, the distribution system in all six NER states, which mainly relies on a 33 kV network, will be strengthened substantially.

21. Recognizing that intrastate T&D systems in the NER states have remained very weak and that there is a critical need to improve the performance of these networks, the CEA developed a comprehensive scheme for the NER in consultation with POWERGRID and the concerned state governments. This scheme is intended to (a) strengthen and augment the existing T&D infrastructure to improve the reliability of service delivery across all the NER states and (b) build institutional capacity of the power utilities and departments in the NER. This scheme is part of the GoI's wider efforts to develop energy resources in the NER for electricity supply within the region, strengthen transmission networks, expand and strengthen sub-transmission systems, and extend last mile electricity connectivity to households.

22. In view of the current challenges and investment needs in the sector, the GoI requested the Bank's support in implementing a set of priority investments under this scheme in the six NER states. The government requested a total funding of US$1.5 billion, which is proposed to be implemented and financed in three phases. This project supports the first phase of the GoI's scheme.

23. Implementation of this project will create a reliable state power grid and improve its connectivity to the upcoming load centers and thus extend the benefits of the grid-connected power to all the consumers. The project will also provide the required grid connectivity to such villages and towns of the states where development of distribution system at the downstream level has been taking place under the GoI sponsored RGGVY/APDRP/R-APDRP schemes.

24. This project is a major step toward meeting the national objective of 'Power to All' through enhancement in access of consumers to grid-connected power supply by improving its availability and reliability, thereby facilitating inclusive growth. This shall also increase the per capita power consumption of these states, which is lagging behind the average national consumption and shall contribute to the economic development of the NER.

25. The GoI has selected[18] POWERGRID as the IA to implement the project in close coordination with the respective state power utilities and departments and according to the Implementation/Participation agreement(s) that were signed separately between POWERGRID and the power utilities and departments of Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura, between March and July 2015, before their inclusion in the project. Once the assets are

[18] Office Memorandum F.No.3/16/2013-Trans dated December 1, 2014 from Ministry of Power, GoI

created and commissioned, they will be transferred to the respective state power utilities and departments on the basis of the takeover/handover procedure as defined in the Implementation/Participation agreement. The state power utilities or departments will then operate and maintain these assets according to normal industry practices

26. Over the past decade, POWERGRID has acquired and developed skills required for successfully planning and implementing large-scale capital investment programs, through their mandate to develop the interstate transmission network of India and also by acting as consultant to some states (as well as other countries) to assist them to plan, design and implement their T&D networks. All the schemes envisaged under this operation are being designed, procured, and implemented by POWERGRID. Local and foreign contractors engaged through ICB will carry out the supply, installation, and erection works. To ensure that the states develop the capacity required to operate and maintain the assets created through this project, the Implementation/Participation agreement provides for states to depute their engineers in POWERGRID to work alongside POWERGRID officials in implementing the schemes and thus develop an understanding of the technical and operational requirements of the assets created.

27. The project will be implemented over a seven-year period and has two components, namely: Component A: Priority Investments for Strengthening of Intrastate Transmission, Sub-transmission, and Distribution Systems and Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States.

Component A: Priority Investments for Strengthening Intrastate Transmission, Sub-transmission and Distribution Systems *(Total cost: US$ 937.6 million, of which US$ 468.8 million financed by IBRD)*

28. This component will include priority investments in strengthening and augmenting the intrastate transmission, sub-transmission, and distribution networks by augmenting old and constructing new 220 kV, 132 kV, 66 kV, and 33 kV lines and associated substations in each of the six participating states. These investments will increase the power transfer capability of the transmission network and improve the electricity supply within the state, by allowing them to draw more power from the national grid, especially their allocated share of power from central sector generating stations. This component will be implemented by POWERGRID, with the support of the states. After commissioning, the assets created under the project will be owned and maintained by the respective state power utilities or departments. In addition, there may be a few requirements of consultancies, to be funded under the Bank funds under this component and for these, the Bank guidelines will be followed.

29. Each of the participating states along with the CEA, which is the national planning body for the electricity sector in India, and POWERGRID have drawn up a long list of subprojects based on current network constraints faced by the states, expected load growth, and expected availability of new generation in the coming years.

30. Table 2.1 shows the summary of planned transmission and sub-transmission lines and substation additions and augmentation under the long list of potential/candidate subprojects. Out

of this long list, identified subprojects which meet the Bank's readiness criteria will be financed and implemented under the project:

Table 2.1. Summary of Long List of Potential/Candidate Subprojects

Items[19]	Unit	Quantity
Transmission line construction (132 kV and above)	circuit kilometers	2,114
Distribution line construction (33 kV)	circuit kilometers	2,031
New 220/132 kV and 132/33 kV transmission substations	Number	33
Transmission capacity addition (new and augmentation)	MVA	4,421
New Distribution substations (33/11 kV)**	Number	85
Distribution Capacity addition	MVA	1,251

Note: Does not include extension of existing substations, which are also included in the long list of potential or candidate subprojects.

31. Table 2.2 and Table 2.3 provide a state-wise summary of planned transformer capacity additions and TLs included under the long list of potential or candidate subprojects.

Table 2.2. Transformation Capacity (MVA)

States	Existing Capacity		Planned Capacity Additions under the Long List of Potential/Candidate Subprojects	
	220 kV	132 kV	220 kV	132 kV
Assam	1,240	2,000	840	804
Meghalaya	425	440	640	300
Nagaland	n.a.*	215	n.a.	245
Manipur	n.a.	318	n.a.	160
Mizoram	n.a.	115	n.a.	125
Tripura	n.a.	490	n.a.	1,307

Note: * The state is constructing a 220/132 kV substation at New Kohima through other sources of funding.

Table 2.3. Transmission Line (circuit kilometers)

States	Existing TL Length**		Planned Additions under the Long List of Potential/Candidate Subprojects	
	220 kV	132 kV	220 kV	132 kV
Assam	1,300	2,650	176	200
Meghalaya	227	887	244	172
Nagaland	n.a.*	260	92	284
Manipur	n.a.	406	n.a.	317
Mizoram	n.a.	729	n.a.	214
Tripura	n.a.	563	n.a.	415

Note: The state is constructing a Loop in Loop out (LILO) on the Misa-Dimapur 220 kV line through other sources of funding.*

** At the end of the 11th plan period.*

32. **Project Implementation Plans (PIPs)**. POWERGRID, together with CEA and each of the participating states, has prepared state specific PIP. The PIP includes a detailed description of the state's power system, system parameters, operation and maintenance practices, institutional arrangement of the sector and for this project, list of sub-components (identified till date) with their technical justification, other important investment programs underway in the state, financial

[19] All new 220 kV, 132 kV, 33 kV lines will have OPGW. In addition, some of the key existing lines will have OPGW installation as well.

management arrangements, procurement plan, economic and financial analysis of investment components, safeguard management, and management of risks for the project in the state. The PIP of each state will also serve as the Operations Manual for the project and will be a dynamic document to be updated to include additional investment components, and any changes to project's monitoring and implementation arrangements, if needed, during the course of project implementation.

33. **Criteria and eligibility for inclusion of new subprojects against the state allocation.** Recognizing that flexibility under this project is needed to ensure maximum development impact, a specific provision is added to include new subprojects (outside of the long list of potential/candidate subprojects) in various states as long as they meet the following criteria that include a combination of techno-economic, environmental, and social requirements and are able to secure the relevant clearances:

(a) State specific PIP is revised—to cover the new subproject including its technical justification, economic/financial analysis, and procurement plan—and approved;

(b) IEAR for the subproject and any other safeguard document (for example, RAP and TPDP, if required) in line with the state specific ESPPF are prepared, approved and disclosed.

Component B: Technical Assistance for Capacity Building and Institutional Strengthening (CBIS) of Power Utilities and Departments of Participating States *(Total cost: US$ 13.4 million)*

34. At the request of the GoI and the states, this component will provide capacity-building support for power utilities and departments across the six participating states.

35. Although the power sectors in the NER states are below the national averages with regard to size and performance, there is variance among these states. Some have done relatively better in specific areas, such as development of regulatory institutions and use of IT systems. In that context, a CBIS plan has been developed for each state, on the basis of a state-specific diagnostic study complement with detailed discussions with key stakeholders of the state. The main focus of the CBIS plan is to strengthen core skills of the utilities in the key areas of utility operations and management, to help the NER utilities achieve efficiency and improvement in service delivery to consumers and ensure the sustainability of assets created under the project. Focus areas of the CBIS plan include strengthening O&M practices, commercial practices (through improvement in MBC systems and processes), load management, procurement management, FM, and HR management.

36. This component will be fully financed by the GoI and procurement of the consultancies to be financed under this component will be carried out according to the GoI/POWERGRID rules and regulations and the states will be responsible for the implementation of the various initiatives developed under the program within their day-to-day systems and processes. During implementation, the Bank will provide technical support (as needed) to the states for the finalization of the scope of work for the specific activities, review of the consultant deliverables, and the development of the implementation plan for consultancies under this component.

37. A long list of the potential interventions/activities that are planned to be taken up under the CBIS plan is provided in Table 2.4. While this list is only indicative, the specific activity to be taken up in a particular power utility and department will be based on the specific priorities and needs proposed by that power utility and department.

Table 2.4. Potential Long List of Interventions under the CBIS Plan

S. No.	Driver	Intervention	Summary of action points
1	Improving revenue management	Integrated plan for improving the MBC processes	• Development of area-specific interventions (processes and investments) on the basis of R-APDRP data • Integration plan of the legacy MBC systems with R-APDRP systems
2		Developing a management information system for the organization based on R-APDRP data	• Design of standard reporting formats for different levels of management • Defining the processes for generating the reports • In the case of energy audit reporting, Phase 1 to include R-APDRP towns
3	Power procurement efficiency	Set up power procurement and trading cell (either managed in-house or externally through traders)	• Formulation of structure/roles/responsibilities of the cell including plan for manning of posts and procurement of software tool for power procurement • In the case of an outsourcing strategy, selection and contracting with a trader and formulating contract conditions
4	Load management	Development of Load management processes	• Designing the to-be processes • Preparation of the load management manual and load regulation protocol • Institutionalizing the processes
5	Capital procurement effectiveness	Development of Procurement Manual	• Preparation of procurement manual, including delegation of powers, policies, and procedures for procurement of works, goods, and consultancies; empanelment of suppliers/contractors; modes of purchase (open, limited, and so on); policies related to processing of tenders/contracts (pre award and post award, including payment processes)
6		Development of Standard Bidding Documents (SBDs)	• Development of standard ratings and specifications for key equipment • Development of standard qualifying requirements • Development of standard commercial conditions • Implementation of e-procurement
7	Network O&M	Development of an O&M manual	• Preparation of a maintenance calendar • Design of to-be O&M process • Inventory management system • Development of formats/checklists/register templates to be adopted for reporting purposes

S. No.	Driver	Intervention	Summary of action points
8		Network planning through load flow studies	• Preparation of templates for data collection • Conducting load flow studies on the states network down to 33 kV level (including constraint and alternative analysis) using a standard software • Developing systems for periodic review of network and load forecasting (at 33 kV substations) • Hands-on training on the software for the staff dealing with system feasibility
9	Financial management	Preparation of asset registers	• Development of framework for asset register including ascertaining asset classes to be covered • Preparation of asset register
10		Computerization of FM systems	• Computerization of FM systems (as a first step toward ERP system over medium to long term)
11		Improving organizational internal controls (compliance with the Companies Act)	• Strengthening the internal audit function in the organization
12		Preparation of finance and accounts manual	• Preparation of finance and accounts manual including charts of accounts and delegation of power • Tools for payable/receivable analysis
13		Material management systems	• Web-based automated tool for material management linked to the inventory management system
14	HR Management	Preparation of HR manual	• Development of an employee database (including skill sets and qualifications) • Developing job descriptions and skill/qualification requirements for all positions • Developing various policies for recruitment, performance management, promotion, and transfer • Defining processes for capacity growth and training and development
15		Employment management systems	• Web-based employee management system for HR record management, employee leave, payroll management system, travel management system, HR audits, and so on
16	Skill/capacity enhancement	Training program	• Trainings (national and international) on technical, procurement, contract management, environment, health and safety, FM, social aspects, and so on • Knowledge exchange visits to other states/countries to interact and exchange ideas with their better performing utilities
17	IT	IT adoption across organization	• Preparation of a road map for gradual and focused adoption and implementation of IT applications

38. Table 2.5 and Table 2.6 provide the allocation of project costs and funding across the six participating states for both the components.

Table 2.5. Allocation of Project Costs and Funding across States (excluding front-end fees) for Component A

States	IBRD Loan	Counterpart Funding - GoI Contribution[20]	Total
	US$, millions	US$, millions	US$, millions
Assam	136.3	136.3	272.6
Manipur	39.9	39.9	79.7
Meghalaya	71.2	71.2	142.3
Mizoram	28.2	28.2	56.3
Nagaland	66.6	66.6	133.2
Tripura	126.7	126.7	253.4
Total	**468.8**	**468.8**	**937.6**

Table 2.6. Estimated Breakdown of Project Costs across States (excluding front-end fees) for Component A and B Combined (All figures in US$, million)

	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Tripura	Total
Base cost (excluding Land and R&R)#	158.3	47.2	77.1	26.2	72.7	150.4	531.8
Land and R&R cost^	16.2	1.5	6.1	1.8	1.2	8.3	35.1
Compensation towards forests, trees, crop, PTCC etc.	4.5	3.4	10.0	8.8	13.1	7.2	47.0
Physical contingencies#	17.9	5.2	9.3	3.7	8.7	16.6	61.4
Price contingencies#	39.6	11.5	20.6	8.1	19.2	36.6	135.7
POWERGRID consultancy charges^	29.7	9.1	15.8	6.3	15.3	28.4	104.6
IDC^	6.4	1.9	3.3	1.3	3.1	5.9	21.9
Project Cost	**272.6**	**79.7**	**142.3**	**56.3**	**133.2**	**253.4**	**937.6**
Capacity Building^	2.2	2.2	2.2	2.2	2.2	2.2	13.4
Grand Total	**274.8**	**82.0**	**144.5**	**58.6**	**135.5**	**255.6**	**951.0**

Note: # Base cost, physical contingencies, and price contingencies are eligible expenditures under Bank financing and will be restricted to US$468.8 million (as indicated in Table 2.5 under IBRD financing) and the remaining will be financed using GoI resources.

^ Land and R&R cost, POWERGRID consultancy charges, IDC, and capacity-building costs will be financed using GoI resources.

[20] Component A costs includes IDC costs, which will be financed from the GoI contribution.

ANNEX 3: IMPLEMENTATION ARRANGEMENTS

India: North Eastern Region Power System Improvement Project (P127974)

Project Institutional and Implementation Arrangements

1. The GoI has appointed[21] POWERGRID as the IA for the project considering the strong project management experience (both design and implementation) of POWERGRID and its deep understanding of the Bank's policies and systems, developed through more than two decades of partnership, field presence in the NER, and the limited institutional capacity of the state power utilities and departments in undertaking a large capital investment program and in engaging with multilateral funding agencies. The management structure of the proposed project has already been set up at various levels, and the roles and responsibilities of POWERGRID and the state power utilities and departments have been clearly defined and agreed upon through an Implementation/Participation Agreement signed between POWERGRID and each of the state power utilities and departments. The project will therefore be implemented by POWERGRID in association with the respective state power utilities and departments and according to the said Implementation/Participation Agreement.

2. While POWERGRID will implement the project in each state, in association with the respective state power utilities and departments, the assets will be transferred to the respective state power utilities or departments upon commissioning on the basis of the taking over procedure as defined in the Implementation/Participation Agreement. The state power utilities and departments will then operate and maintain the assets for their useful life thereafter.

Project Administration Mechanisms

3. A multi-tiered mechanism has been set up to administer and implement the project. At the working level, the following implementation units have been set up:

(a) **Central Project Implementation Unit.** A Central Project Implementation Unit (CPIU) has been set up by POWERGRID at Guwahati (Assam) and includes representation from all the participating state power utilities or departments to monitor the project implementation.

(b) **PMC Project Implementation Unit.** It is the key implementation body that has been set up in each of the states at the state headquarters by POWERGRID and staffed through a dedicated multidisciplinary team that will remain in place throughout project implementation. Further, it has also been agreed that officials from the participating state power utilities and departments will join the PMC Project Implementation Unit (PPIU) on deputation to ensure that the state power utilities and departments are associated in each and every step of project implementation and that they understand the project management practices that are used by POWERGRID for further application and adaptation in their respective organizations. The state officials

[21] Office Memorandum F.No.3/16/2013-Trans dated December 1, 2014 from Ministry of Power, GoI.

will also provide knowledge and support on local issues that may be faced during project implementation.

(c) **State Project Coordination Unit.** A State PCU (SPCU) has been set up in each state by the participating state power utilities and departments to support the project by fulfilling obligation and discharging of the responsibilities under the scope of the state.

4. To monitor the project progress, ensure smooth coordination between different agencies, and resolve issues that may arise during implementation stage, the following monitoring committees have been set up:

(a) **Project Steering Committee.** At the GoI level, a Project Steering Committee (PSC) has been formed comprising officials from the MoP, the Department of Economic Affairs (DEA), Niti Aayog, the Ministry of DoNER, CEA, POWERGRID, and the six participating state governments. The Bank is a special invitee to the steering committee. POWERGRID will also act as a secretariat to the PSC.

(b) **High Powered Committee.** At the state government level, a High Powered Committee (HPC) has been constituted by each of the participating state governments and comprises officials from the participating state power utilities and departments, the state/district administration, law enforcement agencies, and the Forest Department, to ensure coordination between various agencies for timely processing of various permission or approvals or consents or clearances and resolve issues, if any, for smooth implementation of the project in the state.

(c) **Joint Coordination Committee.** This is a body that has been jointly formed by POWERGRID (that is, the IA) and the SPCU in each state to conduct a monthly review of the project implementation for each participating state.

5. **Participation Agreement.** The Implementation/Participation Agreement defines the roles and responsibilities of POWERGRID (as the IA) and the state power utilities and departments based on the counterpart financing and implementation arrangements finalized by the GoI. All the counterpart financing will be provided by the GoI (except local taxes and duties that will need to be reimbursed by the respective states). The loan for the project will be taken by the GoI, which in turn will pass on the funds (both the GoI's own counterpart funds and the Bank loan) to POWERGRID. POWERGRID will sign the Project Agreement with the Bank for the implementation of the project, the states will sign Supplementary Project Agreement with the GoI and the Bank, while the GoI will sign the Loan Agreement with the Bank.

6. According to the roles and responsibilities agreed in the Implementation/Participation Agreement, the following are the main roles that will be performed by POWERGRID:

(a) All the procurement activities under the project will be undertaken by POWERGRID:

(i) All packages under Component A will be invited, evaluated, and awarded by POWERGRID, acting for and on behalf of the state power utilities and departments (details in the section on procurement from paragraph 27 below).

(ii) Component B will be fully funded by the GoI. Procurement for all consultancies services, to be procured under Component B, will be done by POWERGRID following their own rules and regulations and will not be funded by the Bank. The ToR for each consultancy will be agreed between the state power utility and department and the Bank, based on which POWERGRID will undertake the procurement process. The consultant will provide their deliverables to the SPCUs while payment to the consultants will be made by POWERGRID.

(b) POWERGRID, through the PPIU and CPIU, will take the lead role in the project implementation till project commissioning. An indicative list of the key tasks that will be performed by POWERGRID includes the following:

(i) Supervision of site works including field verification or inspection

(ii) Contract award and management

(iii) Testing of equipment

(iv) Verification of contractors' bills and payment to contractors and so on

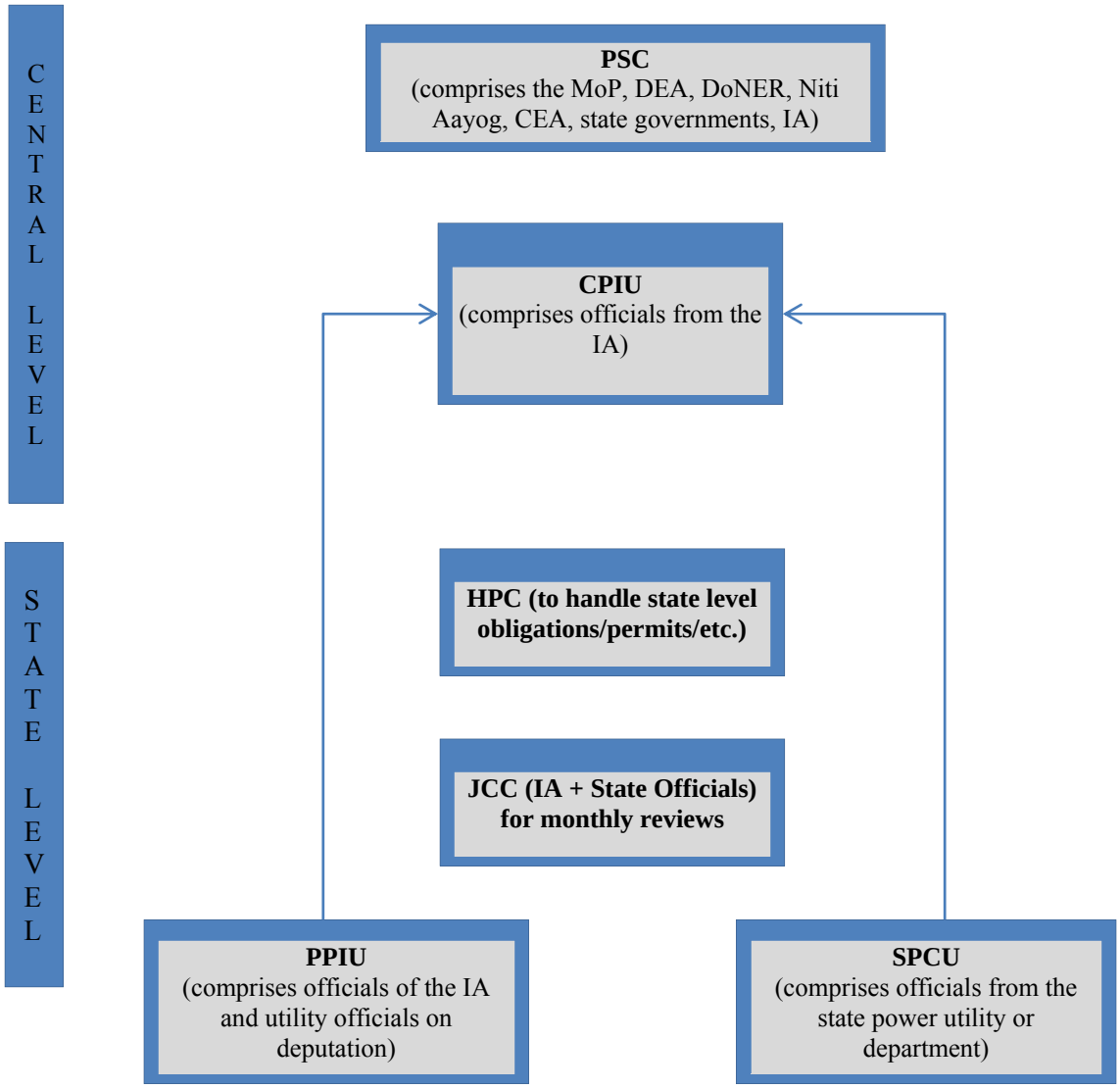
(c) The GoI and POWERGRID will be responsible for the project FM arrangements (details in later paragraphs).

(d) POWERGRID, in association with the SPCU, will carry out the Environmental Assessment (including preparation of the IEARs) and the Mitigation Plan in consultation with the stakeholders and FEARs upon completion of implementation.

(e) State power utilities and departments, through their respective state governments, will undertake the activities related to land acquisition and R&R, including assessment and payment of compensation (in line with state-specific ESPPFs that have been prepared). POWERGRID will provide the necessary support, as required.

7. Key roles and responsibilities are depicted in Figure 3.1.

Figure 3.1. Roles and Responsibilities



FM, Disbursements, and Procurement

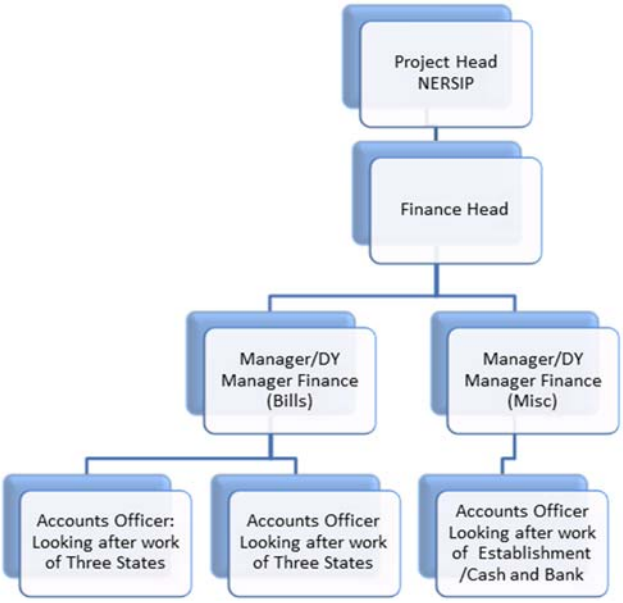
8. The FM arrangements of the project are adequate to account for and report on sources and uses of project resources and meet the Bank's fiduciary requirements subject to compliance with the FM framework detailed below. The IBRD Loan is being taken by the MoP. POWERGRID will be the project IA that will receive funds from the MoP for project implementation, which will include construction of assets and capacity building, for and on behalf of six states (Assam, Manipur, Meghalaya, Mizoram, Tripura, and Nagaland) in the NER.

Financial Management

9. The GoI and POWERGRID shall be responsible for the project's FM arrangements. The FM arrangements at the MoP, GoI, will be according to the existing GoI arrangements. The budgeting and accounting procedures for the subject loan to be followed by the MoP shall be according to the General Financial Rules 2005 of the GoI (available at http://www.finmin.nic.in). POWERGRID is already implementing Bank-funded projects and is well aware of the Bank's fiduciary requirements. POWERGRID will implement the project according to the FM requirements of the Bank's Loan and Project Agreement (and any other related agreement) and as further detailed in the PIPs prepared for each of the states. Given the project FM arrangements described below and POWERGRID's experience in implementation of Bank-funded projects, the FM risk rating for the project is Moderate.

10. **Staffing.** POWERGRID will provide for adequate FM staffing at the CPIU and in the case of PPIUs, only if needed. Currently two officers, the assistant general manager (AGM) and the accounts officer (AO), are posted at the CPIU, and it is envisaged that the team shall be progressively enhanced to six finance persons, who shall be in place during the tenure of the project. The finance head (currently the AGM) will be supported by two managers or deputy managers, who will in turn have three AOs reporting to them. Figure 3.2 depicts the proposed staffing for the Finance Department at the CPIU.

Figure 3.2. Proposed Staffing for the Finance Department at the CPIU



11. **Budgeting.** The MoP will prepare the annual budget estimation for the project based on a detailed work plan provided by POWERGRID and ensure adequate budgetary allocation in its demand for grants. For FY16–17, the MoP has provided a budget of INR 2,340 million. The MoP will also ensure that budgeted funds are made available to POWERGRID for implementation of this project on time. For better budget and expenditure monitoring, it is recommended that the MoP opens separate budget heads for making provision for project expenditure. Using the work plan provided by POWERGRID, states will also provide in their budget for reimbursement/

exemption of state-level taxes and costs of its personnel working on the project (other than the ones on deputation with POWERGRID).

12. Preparation of the proper plan and budget plays an important role in timely implementation of a project. Planning and budgeting involves identifying specific tasks or objectives of the project to be achieved in a given time frame. The planning and budgeting at POWERGRID for this project will be as described in the following paragraphs. For effective project implementation, POWERGRID shall prepare, by state and activity:

(a) an overall plan for the duration of the project;

(b) an annual plan and budget with quarterly breakups; and

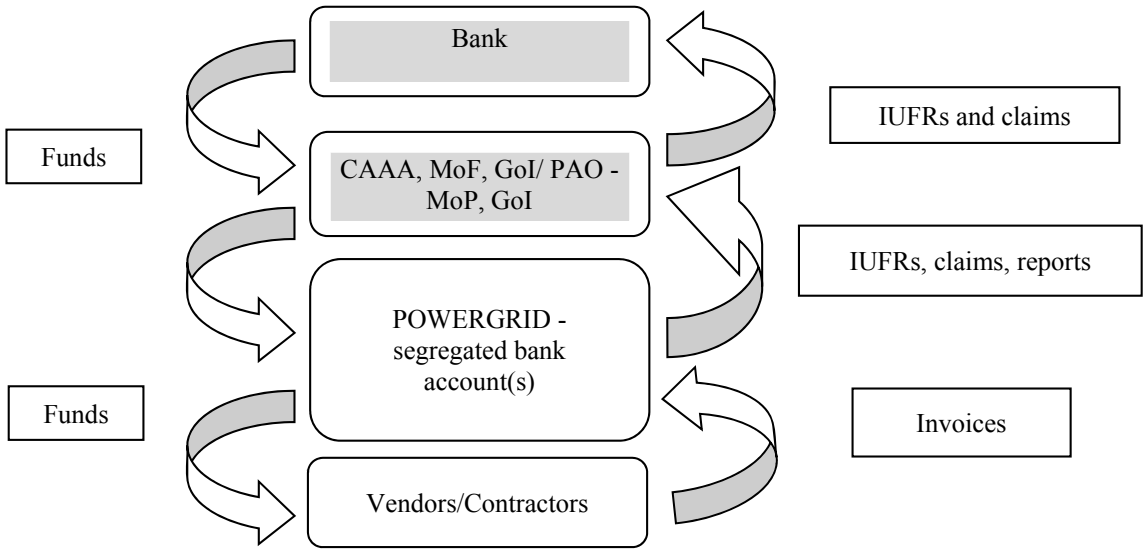
(c) quarterly statements providing variance between planned and actual expenditure.

13. The above statements shall be reviewed by the CPIU and PPIUs on a periodic basis and shall also be shared with the Bank.

14. **Accounting policies and procedures.** POWERGRID has been incorporated as a company under the Companies Act, 1956, and hence the financial reporting (the balance sheet and the profit and loss account) is governed by the provisions of that act. In accordance with the Companies Act, POWERGRID follows the accrual or commercial system of accounting and adheres to the national accounting standards, as issued by the Institute of Chartered Accountants of India and notified by the GoI. Project accounting shall be carried out in accordance with the accounting policy of POWERGRID, using the existing accounting systems. The claims submitted to the Bank will be on a cash basis, eliminating items like retention money and unpaid liabilities. The project accounting will be carried out at the CPIU, Guwahati, and the accounting records will also be maintained at the said location. The CPIU, Guwahati, will be the central point for release of all payments under the project. Bills submitted in the CPIU, PPIUs, or site offices will be duly approved according to the existing delegation and procedures and will be forwarded to the CPIU, Guwahati, for subsequent checks and release of payment. POWERGRID shall maintain all records and documents (contracts, orders, invoices, bills, receipts, and other documents) evidencing expenditures under the project and retain these until at least the later of (a) one year after the Bank has received the final or last audited financial statements required under the IBRD Loan and (b) two years after the closing date of the IBRD Loan. During such retention period, POWERGRID shall enable the GoI/state/ Bank representatives to examine those records.

15. **Funds flow.** The loan will be taken by the GoI and the disbursements will be managed by the office of the Comptroller of Aid, Accounts, and Audit (CAAA), the MoF, GoI. The funds flow and reporting arrangements under the project will be as shown in Figure 3.3.

Figure 3.3. Funds Flow



16. **Between the GoI and the IA.** The MoP will disburse funds in advance to POWERGRID's segregated project bank account(s) based on the initial forecast. POWERGRID shall not use any of its own funds for the subject project (Components A and B) other than the funds received, respectively, under the PMC NERPSIP[22] and Capacity Building Program budget heads. Quarterly IUFRs prepared by POWERGRID will report expenditure incurred during the previous quarter and forecast for subsequent fund requirement.

17. **Between the Bank and the GoI.** Based on IUFRs prepared by POWERGRID, the office of the CAAA will submit withdrawal applications to the Bank for disbursement. The primary method of disbursement between the Bank and the GoI will be reimbursement.

18. **Reporting.** The FM reporting under the project shall be as follows:

(a) **IUFR.** POWERGRID will be required to submit to the Bank quarterly IUFRs within 60 days from the end of the quarter. The IUFR will be prepared by POWERGRID on the basis of books of accounts and shall contain information on project implementation, including the expenditure incurred during the last quarter and forecast for the next two quarters. The format of the IUFR is provided in the PIPs and will also be appended to the Bank's Disbursement Letter.

(b) **Project annual financial statements.** The project annual financial statements will include (a) IUFRs for the fourth quarter and (b) any other statement agreed with the Bank.

19. **Inventory and asset management**. POWERGRID's own inventory management systems and procedures will be used for the project. The inventory procured and the assets constructed by POWERGRID on behalf of the states shall be clearly marked and recorded such that they are not intermingled with POWERGRID's own inventory at any point in time. In addition to

[22] NERPSIP is abbreviated form of North Eastern Region Power System Improvement Project

POWERGRID, which will have the primary responsibility for physical verification of inventory and assets under construction, the internal and external auditors will also carry out physical verification on a sample basis.

20. **Internal audit.** The internal audit of the project shall be carried out by an auditing institute or a consultancy firm hired on a competitive basis according to the criteria acceptable to the Bank. The scope of the audit will be according to the agreed ToR and will include integrated procurement, FM, and contract management audit. Based on the audit, the auditor will provide suggestions for improvement.

21. **External audit.**[23] The external audit of the project will be carried out by a firm of chartered accountants appointed on a competitive basis according to the procurement procedure acceptable to the Bank. The ToR for the external audit will be agreed with the Bank and provided in the PIP. The annual audit report shall be submitted to the Bank within nine months of the closure of the financial year. The annual audit report will be accompanied by (a) audited project financial statements, which will separately identify each component under the project, its progress, and the funding sources for each of the components, with management assertion; (b) an audit report expressing an opinion on (i) the project financial statements and (ii) the accuracy of the IUFRs submitted under the project; and (c) a management letter highlighting significant issues to be reported to the management. In addition, if the designated account advance is used under the project, an audit report for the designated account held with the office of the CAAA will also be submitted by the GoI within nine months of the close of the financial year.

22. **Ineligible expenditure.** The following expenditures are treated as ineligible expenditures for financing from the Bank under this project:

(a) All land acquisition/ purchases required for the purpose of the project

(b) Any compensation, resettlement and rehabilitation payment to affected person in accordance with the provision of the RAPs, CPTDs and TPDP

(c) Any consultancy fee to be paid to the IA on account of its carrying out the project

(d) Any taxes levied by the participating states

(e) Any compensatory afforestation payments

(f) Any interest during construction (IDC)

(g) Activities to be carried out under Component B of the project.

23. **Disclosure.** Under the Access to Information Policy of the Bank, the annual project audit report and the audited project financial statements will be disclosed on the Bank's website.

[23] As on date, there are no overdue audit reports from the implementing agency (POWERGRID).

Disbursements

24. IBRD funds will be disbursed using reimbursement method, based on expenditure reported in the quarterly IUFRs. The other methods of disbursement that can be considered later based on project needs are advance payment and direct payment. Supporting documents required for Bank disbursement using these various methods are documented in the Disbursement Letter issued by the Bank.

Table 3.1. Disbursement Table

Category	Amount of the Loan Allocated (US$)	Percentage of Expenditures to Be Financed (Inclusive of Taxes, Except Taxes Levied by the Participating States)
(1) Goods, works, consultants' services and non-consulting services under Component A, as well as audit costs for the project	468,825,000	100
(2) Front-end fee	1,175,000	100
(3) Interest rate cap or interest rate collar premium	0	–
Total Amount	**470,000,000**	

Note: Bank would first finance upto 100 percent of eligible expenditure under agreed contracts under "component A" upto the IBRD loan amount. Thereafter, balance payments, if any, would be financed by GoI.

25. **Retroactive financing.** No withdrawal shall be made for payments made prior to the date of the Loan Agreement, except that withdrawals up to an aggregate amount not to exceed ninety four million United States Dollars (USD 94,000,000) may be made for payments made prior to the date of Loan Agreement date but on or after March 1, 2016, for eligible expenditures.

Procurement

26. Procurement for the proposed project under Component A will be carried out in accordance with the Bank's Procurement Regulations for Borrowers for Goods, Works, Non-Consulting and Consulting Services dated July 1, 2016 and applicable to Investment Project Financing (IPF) here in after referred to as "Regulations". The project will be subject to the Bank's Anticorruption Guidelines, dated October 15, 2006, and revised in January 2011 and as of July 1, 2016. Procurement of the consultancies to be financed under Component B, which will not be financed out of the proceeds of the Loan, will be carried out according to GoI or POWERGRID rules.

27. As per the requirement of the Regulations, a Project Procurement Strategy Document (PPSD) has been developed, based on which the procurement plan has been prepared and sets out the selection methods to be followed by the borrower during project implementation in the procurement of goods, works, non-consulting and consulting services financed by the Bank. The Procurement Plan for the project implementation is enclosed. The Procurement Plan will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity.

Summary of PPSD

GoI has selected POWERGRID, as the Implementing Agency (IA) to implement the project in close coordination with the six participating state's power utilities and departments and accordingly POWERGRID has signed separate implementation/ participation agreement(s) with the power utilities and departments of six participating states.

Over the past decade, POWERGRID has acquired and developed skills required for successfully planning, procuring, monitoring contracts and implementing large scale capital investment programs including those funded by World Bank and Asian Development Bank. Based on the track record of successful implementation of a series of World Bank funded projects, there is no specific concern on capacity of POWERGRID to successfully procure and implement the project.

This Project includes investments in strengthening and augmenting the intra-state transmission, sub-transmission and distribution networks by upgrading old and constructing new 220 kV, 132 kV, 66 kV and 33 kV lines and associated sub-stations in each of the six participating states.

Based on the project requirements, technical solutions and market base, procurement strategy has been developed to go for separate packages – state wise and going for Open international competition. The suppliers' base for each of the above segments are distinct with different skills and risks. The procurement consists of: (i) packages for TLs (tower packages); (ii) Packages for distribution system (DMS) (lines and substations) including line and substation for 33 kV; (iii) associated substations (66 kV, 132 kV and 220 kV) and transformer procurements; and (iv) pile foundation packages for associated lines. POWERGRID has vast experience in such procurements.

Generally in India, market players for transmission and distribution sectors are distinct from each other, meaning that transmission sector contractors normally do not work on distribution projects, with the exception of a handful of firms.

The main market players involved in these sectors are: (a) equipment manufacturers; and (b) contractors who source equipment from manufacturers to construct sub-stations and lines. Within transmission sector, TL and sub-station contractors are also generally different as the requirement of technical expertise, tools & plant and resources, differs between the two areas; though here again, there are some large companies who have developed their expertise in constructing both lines as well as sub-stations.

While clubbing a uniform rule cannot be applied because each state has a unique topography, organization structure and jurisdiction; and packaging has also been done in consultation with the utilities and power departments, who will ultimately own the assets. Lastly, the packaging in distribution is determined by habitat and existing network.

As far as the NER is concerned, rail and road connectivity is poor and some parts are not accessible during monsoon season. Power equipment is not available locally and has to be

transported from outside the region. The technical design is done in such a way to avoid over dimensioned consignment both in size and weight except Assam where there is no such problem.

To monitor the progress of the project, ensure smooth coordination between different agencies, and resolve issues that may arise during implementation stage, a multi-tiered institutional monitoring mechanism has been set-up.

The size of package has been decided taking into consideration technical requirement, the geographic spread, etc. The slice and packaging has been used to keep the package size at an optimum but is mostly based on technical and geographical requirements. Similar type of work is included in a package to the extent possible. Normally, AIS sub-stations, GIS sub-stations and transmission lines work at EHV levels are not clubbed in a single package. In a single package, normally, all those elements are clubbed which are required in similar time frame. The package is also decided generally in such a way that it is not spread over a large geographical area involving different terrains and states to the extent possible. In the project, as per requirement of the states, in a state, work of other state has not been clubbed.

28. **Systematic Tracking of Exchanges in Procurement (STEP)**. The project will implement STEP, a World Bank planning and tracking system, which would provide data on procurement activities, and establish benchmarks. The details of the procurement activities, presently prepared in the procurement plan would be transferred in the STEP system. Initial training on the operation of the STEP system has been provided to officers of POWERGRID.

29. **Advance Procurement**. POWERGRID has proceeded with initial steps of procurement for about 40 packages, and these are consistent with the Sections I, II and III of the Regulations.

30. **e-Procurement system.** POWERGRID is going to use the e-Procurement system for all procurements to be carried out under the project. An assessment of the e-Procurement system being used by POWERGRID (supported by Telecommunications Consultants India Ltd) was carried out according to the multilateral development banks' requirements and the system is acceptable. For any international competition, POWERGRID has to ensure that foreign bidders are not required to travel to India for getting the digital signature to participate in bidding, by providing assistance to them. The assessment was carried out as part of the ongoing Fifth Power System Development Project.

31. The following major procurements are envisaged under the project:

(a) **Procurement of works.** There are a few works (pile foundation works) envisaged to be procured under the project. These would be procured using Request for Bids selection method. Based on the PPSD, the market approach for such packages would use the option of Open, National, Single stage two envelope. For all procurements under National Competition, Bidding Documents, as agreed with the GoI task force (as amended from time to time) will be used.

(b) **Procurement of Supply and Installation of plant and equipment.** This includes intrastate transmission, sub-transmission, and distribution networks by constructing

new 220 kV, 132 kV, 66 kV, and 33 kV lines and associated substations in each of the six states, which will be carried out based on 'Procurement of Plant Design, Supply, and Installation'. Further, goods will also be procured under 'Procurement of Plant Design, Supply, and Installation' contracts following Request for Bids selection method. Based on the PPSD, the market approach would for most of the packages use the option of Open, International, Single stage two envelope, Best and Final Offer or BAFO (Electronic platform) or Negotiations procedures as the case may be detailed in the Procurement Plan. Selection will be carried out by using the Bank's Standard Procurement Document (SPD) - Request for Bids Plant, Design, Supply and Installation (without pre-qualification) as a base and incorporating suitable modifications to include BAFO (thru electronic platform)/ Negotiations and the same would be agreed with the Bank.

(c) **Selection of consultants.** The project may include hiring of consultancy services for capacity building of the state utilities, but the majority of these will be funded by the GoI resources following their own guidelines. Any consultancy services needed, and to be funded by the Bank funds would follow the provisions of the Regulations.

32. BAFO (using e-platform): The SPD would be suitably modified to incorporate and disclose the provisions of application of BAFO (thru electronic platform). Following the completion of the evaluation of the Technical Parts of bids, the Purchaser shall notify in writing those bidders whose bids were considered substantially non-responsive to the requirements in the RFB, advising them of the following information that their financial bids would be returned unopened. MoP has issued regulation on June 11, 2015 wherein the application of BAFO[24] (thru electronic platform) in case of all packages is to be applied for price discovery. The process for submitting BAFOs will be specified in the Data sheet of the RFB. BAFO is a final opportunity for bidders to improve their Proposals without changing the specified business function and performance requirements. The number of bidders[25] invited to be a part of the BAFO process would be as specified in the PPSD. Once decided by POWERGRID to apply BAFO provisions to a particular package under the process of procurement, the Application Service Provider (Probity Auditor) is authorized by POWERGRID for conducting the process. The service provider is also provided with various necessary templates (including the notice, business rules, process compliance form, business rules etc.) by POWERGRID. In order to conduct BAFO, a 'Dynamic Template Bidding (Rank Disclosed)' method is followed, wherein the invited bidders are able to view 'Rank of the respective bidder' and 'Bid price placed by the respective bidder'. The bidders are then invited to offer discount in the Lump-sum component prices as per the template provided to them. The BAFO period is pre-specified and after the first half of that period, L1 price is visible to all the bidders with valid bid. The bidders are allowed to further revise their prices, and the bidding continues with an auto-extension if a bidder quotes a further lower price within final few minutes (pre-

[24] Nomenclature used for BAFO by PGCIL is e-Reverse Auctions.

[25] Only the bidders whose bids are technically responsive and the lowest ranked N/2 bidders (in case "N' is even) or (N+1)/2 bidders (in case 'N' is odd), subject to minimum of three (03) bidders, would be invited to participate, where 'N' is the number of bidders whose bids have been found to be responsive. In case only bids of two bidders are found to be responsive, the e-RA would be carried out with both the parties.

specified) of specified closing time of auction. POWERGRID ensures the training of bidders' personnel regarding the rules/procedure, free of cost, through Application Service Provider (ASP).

Procurement Capacity and Risk Assessment of Implementing Agencies

33. **Procurement risk assessment.**

34. The GoI has appointed POWERGRID to be the IA. Under this implementation arrangement, POWERGRID will implement the project in close coordination with the respective state power utilities and departments, and POWERGRID has signed an Implementation/Participation Agreement separately with each of the power utilities and departments of the participating states, which clearly stipulates the role and responsibility of POWERGRID as the IA. As the IA, POWERGRID will be responsible for undertaking all procurements and contract management activities on behalf of the six participating states.

35. The Procurement Risk Assessment and Management System (PRAMS) has been finalized during appraisal. Based on the assessment and taking note of the role and responsibility of POWERGRID as provided for in the Implementation/Participation Agreement wherein all procurement activities are going to be carried out centrally from headquarters and contract management is going to be done by the regional offices, the procurement risk rating is rated as Moderate. POWERGRID has staff with expertise in procurement and contract management in conducting procurement in accordance with Bank policies and procedures, having successfully handled procurement activities under Bank-funded projects.

36. While the decision-making process and primary responsibility for the successful implementation of the project will rest with POWERGRID, the support and close involvement of state utilities at the local level as well as the GoI, in particular the MoP and the Ministry of DoNER, at the central level will be critical. POWERGRID is recruiting staff to be hired at the regional level and also officials on deputation from the state utilities who will be involved in contract management over the implementation period of the project.

37. **Record keeping.** All records pertaining to award of tenders, including bid notification, register pertaining to sale and receipt of bids, bid opening minutes, bid evaluation reports and all correspondence pertaining to bid evaluation, communication sent to/with the Bank in the process, bid securities, and approval of invitation/evaluation of bids by POWERGRID (as the IA) would be retained by POWERGRID.

38. **Disclosure of procurement information.** The following documents shall be disclosed on the POWERGRID/state utility websites: (a) a Procurement Plan and updates; (b) an invitation for bids for goods and works for all contracts; (c) request for expression of interest for selection/hiring of consulting services; (d) contract awards of goods and works procured following international and national procedures; (e) a list of contracts/ purchase orders placed following shopping procedures on a quarterly basis; (f) a list of contracts following direct contracting (DC) on a quarterly basis; (g) a monthly financial and physical progress report of all contracts; and (h) an action taken report on the complaints received on a quarterly basis.

39. The following details shall be sent to the Bank for publishing on the United Nations Development Bank and Bank external website: (a) an invitation for bids for procurement of goods

and works using open international procedures; (b) contract award details of all procurement of goods and works using open international procedure; and (c) a list of contracts/ purchase orders placed following DC procedures on a quarterly basis.

40. Further, POWERGRID/state utilities will also publish on their websites any information required under the provisions of 'suo moto' disclosure as specified by the Right to Information Act.

41. **Oversight and Monitoring by the Bank.** Based on the experience of the Bank on prior review and post review procurements under earlier Bank funded projects implemented by POWERGRID, no major observations have been found. In light of this, and noting that procurements under this project are similar and going to be carried out using Request for Bids (RFB) the prior review thresholds presently applicable to the ongoing Fifth Power System Development Project are being maintained and are reflected in the procurement plan.

42. All contracts not covered under prior review by the Bank will be subject to post review during implementation support missions and/or special post review missions, including missions by consultants hired by the Bank. To avoid doubts, the Bank may conduct, at any time, Independent Procurement Reviews (IPRs) of all the contracts financed under the loan.

43. The high risk and high value procurements will be identified for increased contract management support and indicated in the procurement plan. POWERGRID will develop key performance indicators (KPI) for such identified contracts and the KPIs would be monitored during actual execution of contracts. Bank team will provide additional due diligence and independent review of the contract performance of such identified procurements.

44. **Frequency of procurement supervision.** Two missions a year, at an interval of six months, are envisaged for procurement supervision of the proposed project.

45. **Contract management.** A fully staffed CPIU (POWERGRID) will be responsible for overall project/contract management. The team will be ably assisted by a multiskilled project management team that will be engaged to provide overall implementation support and monitor all works and consultancy contracts.

Procurement Plan

I. General

1. Project Information

Country	:	India
Borrower	:	Government of India
Project Name	:	North Eastern Region Power System Improvement Project
Loan Credit No.	:	

2. Bank's Approval Date of the Procurement Plan : May 23, 2016

3. Date of General Procurement Notice : January 7, 2015

4. Period Covered by this procurement plan : 24 months

II. Goods, Works, and Non-Consulting Services

1. Thresholds for the Method of Procurement:

Method of Procurement	Thresholds for Method (US$ equivalent)
Open International (Goods)	> 3 million
Open National (Goods)	> 100,000 and up to 3 million
RFQ (Goods / works)	Up to 100,000
Open International (Works /Supply and Installation)	> 40 million
Open National (Works / Supply and Installation)	> 100,000 and up to 40 million
Open International (Non-consulting Services)	> 1 million
Open National (Non-consulting Services)	< 1 million
Direct Contracting	No threshold; meet requirements of regulations (A4)

Prior Review Thresholds

Based on the experience of the Bank on prior review and post review procurements under earlier Bank funded projects implemented by POWERGRID, no major observations have been found. In light of this, and noting that procurements under this project are similar and going to be carried out using Request for Bids (RFB) the prior review thresholds presently applicable to the ongoing Fifth Power System Development Project are being maintained..

For clearance of the bidding documents, the value of each slice will be considered:

- If the estimated value of any slice of a package is more than US$25 million, the bidding document for the entire package will be prior reviewed.

- If the estimated value of each slice is less than US$25 million, but the combined value of all the slices is more than US$25 million, the bidding documents will not be prior reviewed. However, one sample bidding document will be agreed with the Bank for each type of package and the bidding documents, including those under post review, will be prepared according to this agreed sample. The clauses that will need modifications will also be agreed with the Bank.

For clearance of the recommendation for award, duly taking into consideration the use of two envelopes, the following will considered:

- If the estimated value of any of the slices in the package is US$25 million or more, the entire package will be subject to prior review.

- If the estimated value of each slice is less than US$25 million but the value of complete package is US$25 million or more, the award recommendation and the evaluation report for the complete package of all the slices will be subject to prior review. For this purpose, POWERGRID will forward a set of complete bidding documents and the evaluation report to the Bank for prior review.

The prior review thresholds will be reviewed during the implementation of the project and modified, based on the risk assessment.

2. **In the case of contracts subject to prior review,** the Implementing Agency shall seek the Bank's no objection **before granting/agreeing to** (a) an extension of the stipulated time for performance of a contract that either increases the contract price or has an impact on the planned completion of the project; (b) any substantial modification of the scope of works, goods, non-consulting services or consulting services, other significant changes to the terms and conditions of the contract; (c) any variation order or amendment (except in cases of extreme urgency) which singly or combined with all variation orders or amendments previously issued, increase the original contract amount by more than 15 percent; (d) the proposed termination of the contract.

A copy of all amendments to the contract shall be furnished to the Bank for its record.

3. Prequalification

Not Applicable

Domestic Preference. The provision of domestic preference will be applied in the evaluation of bids in accordance with Annex VI of the Regulations**.**

4. Standard Request for Bids (RFBs)

Bank's Standard RFB Plants dated July 2016 (forthcoming) will be used as a base and incorporating suitable modifications to include BAFO (thru electronic platform)/ Negotiations and the same would be agreed with the Bank for all supply and installation of transmission lines and substations subject international competition. Bank's SPDs will also be used for the selection of consultancy services, and the procurement of works, and goods.

5. Any Other Special Procurement Arrangements

National competition for the procurement of goods and works according to the established thresholds will be conducted in accordance with paragraphs B.4 of Section VII of the Regulations and the following provisions:

(a) Only the model bidding documents agreed with the GoI task force (and as amended for time to time) shall be used for bidding.

(b) Invitations to bid shall be advertised in at least one widely circulated national daily newspaper (or on a widely used website or electronic portal with free national and international access along with an abridged version of the said advertisement published in a widely circulated national daily, among others, giving the website/electronic portal details from which the details of the invitation to bid can be downloaded) at least 30 days before the deadline for the submission of bids.

(c) No special preferences will be accorded to any bidder either for price or for other terms and conditions when competing with foreign bidders, state-owned enterprises, small-scale enterprises, or enterprises from any given state.

(d) Extension of bid validity shall not be allowed with reference to contracts subject to Bank prior review without the prior concurrence of the Bank (i) for the first request for extension if it is longer than four weeks and (ii) for all subsequent requests for extension irrespective of the period (such concurrence will be considered by the Bank only in cases of force majeure and circumstances beyond the control of the purchaser/employer).

(e) Rebidding shall not be carried out with reference to contracts subject to Bank prior review without the prior concurrence of the Bank. The system of rejecting bids outside a predetermined margin or 'bracket' of prices shall not be used in the project.

(f) Rate contracts entered into by the Directorate General of Supplies and Disposals (DGS&D) will not be acceptable as a substitute for national competition procedures unless incorporation of right to audit and fraud corruption clauses. DGS&D contracts will be acceptable, however, for any procurement under the shopping procedures.

(g) No negotiations are conducted even with the lowest evaluated responsive bidders.

6. The bid evaluation will be carried out according to the agreed timeline in the Procurement Activity Schedule.

7. Summary of the procurement packages planned during the first 24 months after project effectiveness (including those that are subject to retroactive financing and advance procurement):

Goods/ Works

S. No.	Activity Description	Estimated cost (US$ million)	Bank Oversight	Procurement Approach / competition	Selection Methods	Evaluation Method	Expected date of opening	Expected date of contract
	ASSAM							
1a	**Substation Package (ASM-SS-01)** Substation (s/s) package excluding transformer for the following: (a) 132/33 kV Silapathar (New) s/s; (b) 132/33 kV Tezpur (New) s/s; (c) 132/33 kV Dhemaji s/s (Extension); (d) 132/33 kV Sonabali s/s (Extension); (e) 220/132 kV Samaguri s/s (Augmentation)	10.11	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/7/2015	07/30/2016
1b	**Substation Package (ASM-SS-02)** Substation package excluding transformer for the following: (a) 220/132 kV Behiating (New) s/s; (b) 220 kV Tinsukia s/s (Extension); (c) 132/33 kV Chapakhowa (New) s/s; (d) 132/33 kV Sarupathar (New) s/s; (e) 132/33 kV Teok (New) s/s; (f) 132/33kV Rupai s/s (Extension)	12.30	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/7/2015	07/30/2016
1c	**Substation Package (ASM-SS-03)** Substation package excluding transformer for the following: (a) 220 kV Rangia s/s (Extension); (b) 132/33 kV Tangla (New) s/s; (c) 132/33 kV Hazo (New) s/s; (d) 132/33 kV Kahalipara s/s (Extension); (e) 132/33 kV Dhaligaon s/s (Augmentation)	7.07	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/7/2015	07/30/2016
2	**GIS Substation Package (ASM-SS-04**) GIS substation package including 132 kV cables for the following: (a) 220/132 kV Amingaon (New) s/s; (b) 132/33 kV Guwahati M.C. (New) s/s; (c) 132/33 kV Paltanbazar (New) s/s; (d) 132 kV Kamakhya s/s (Extension)	29.29	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/26/2015	05/06/2016
3	**Transformer Package (ASM-TR-01)** Transformer package for the following: 3-Phase auto transformer at: (a) Amingaon (New) GIS s/s; (b) Samaguri s/s (Augmentation); (c) Behiating (New) s/s; (d) Dhaligaon s/s (Augmentation); (e) GMC (New) GIS s/s; (f) Paltanbazar (New) GIS s/s; (g) New Tezpur (New) s/s; (h) Samaguri s/s (Augmentation); (i) Hazo (New) s/s; (j) Tangla (New) s/s ; (k) Silapathar (New) s/s; (l) Teok (New) s/s; (m) Sarupathar (New) s/s; (n) Chapakhowa (New) s/s	25.48	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/7/2015	07/30/2016

4a	**Tower Package (ASM-TW-01)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for: (a) 220 kV D/C Rangia-Amingaon TL; (b) 220 kV D/C Tinsukia-Behiating TL	11.11	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/14/2015	07/30/2016
4b	**Tower Package (ASM-TW-02)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 132 kV D/C Kahilipara-Guwahati Medical College TL; (b) 132 kV S/C (on D/C Tower) Rupai-Chapakhowa line; (c) 132 kV S/C (on D/C Tower) Dhemaji-Silapathar TL; (d) 132 kV D/C Amingaon-Hazo TL; (e) LILO of 132 kV S/C Rangia-Rowta TL at Tangla; (f) LILO of 132 kV S/C Golaghat-Bokajan at Sarupathar; (g) 132 kV D/C Sonabil-Tezpur TL; (h) LILO of 132 kV S/C Jorhat-Nazira at Teok; (i) LILO of 132kV S/C Kamalpur- Sishugram line at Amingaon; (j) LILO of 132kV S/C Kamalpur-Kamakhya line at Amingaon	18.00	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/14/2015	07/30/2016
5	**Pile Foundation Package (P101)** Package of River Crossing Locations corresponding for Tower Packages TW-01 and TW-02	7.89	Post	Open/ National		Lowest evaluated cost	10/21/2015	07/30/2016

6a	**Distribution System Package (ASM-DMS-1)** Package includes (a) 33/11 kV Silapathar-II (New) s/s - 2x5 MVA; (b) 33/11 kV Hathimurah-2 (New) s/s - 2x5 MVA; (c) 33/11 kV Mailo (New) s/s - 2x5 MVA; (d) 33 kV line on ACSR Raccoon from 132/33 kV Silapathar (New) s/s to Silapathar-II (New) s/s; (e) 33 kV line ACSR Raccoon from 132/33 kV Silapathar (New) s/s to Existing Silapathar; (f) 33 kV line on ACSR WOLF from 132/33 kV Existing Samaguri s/s to 33/11 kV Hathimurah-2 (New) s/s; (g) 33 kV line on ACSR WOLF from Existing Shakardeo nagar 220/132/33 kV s/s to 33/11 kV Mailo (New) s/s; (h) 33 kV bay addition at Existing Silapathar s/s - 1no.; (i) new 33/11 kV LGM hospital s/s - 2x10 MVA; (j) 33 kV line on ACSR WOLF from 132/33 kV Tezpur (New) s/s to 33/11 kV LGM hospital (New) s/s - 2x10 MVA; (k) 33 kV line on ACSR WOLF from 132/33 kV Tezpur (New) s/s to Parowa Existing s/s; (l) 33 kV line on ACSR WOLF from 132/33 kV Tezpur (New) s/s to Dolabari Existing s/s; (m) Bay addition at Parowa Existing s/s - 1nos.; (n) Bay addition at Dolabari Existing s/s - 1 nos., Samguri Existing 132 kV s/s - 1 nos.; (o) Bay addition at Existing Shakardeo Nagar 220/132/33 kV s/s - 1nos.	8.51	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/29/2015	12/01/2016

6b	**Distribution System Package (ASM-DMS-2)** Package includes: (a) 33/11 kV Romai (New) s/s -2x10 MVA; (b) 33/11 kV Bogibil (New) s/s – 2x5 MVA; (c) 33/11 kV Dibrugarh (New) s/s – 2x10 MVA; (d) 33 kV line on ACSR WOLF from 132/33 kV Existing Dibrugarh s/s to 33/11 kV Romai (New) s/s; (e) 33 kV line on ACSR WOLF from 220/132 kV Behiating (New) s/s to 33/11 kV Bogibil (New) s/s; (f) 33 kV line on ACSR WOLF from 220/132 kV Behiating (New) s/s to 33/11 kV Dibrugarh (New) s/s; (g) 33 kV line on ACSR WOLF from 132/33 kV Chapakhowa (New) s/s to 33/11 kV Chapakhowa Existing s/s; (h) 33kV line on ACSR WOLF from 132/33 kV Sarupathar (New) s/s to Barapathar Existing 33/11 kV s/s; (i) 33 kV line on ACSR WOLF from132/33 kV Sarupathar (New) s/s to Sarupathar Existing 33/11 kV s/s; (j) 33 kV line on ACSR WOLF from 132/33 kV Sarupathar (New) s/s to Sariajhan Existing 33/11 kV s/s; (k) 33 kV line on ACSR WOLF from132/33 kV Teok (New) s/s to Teok Existing 33/11 kV s/s; (l) 33 kV line on ACSR WOLF from 132/33 kV Teok (New) s/s to Kakojaan Existing 33/11 kV s/s; (m) 33 kV line on ACSR WOLF from132/33 kV Teok (New) s/s to Zangi Existing 33/11 kV s/s; (n) 33 kV line on ACSR WOLF from132/33kV Teok (New) s/s to Pragati Existing 33/11 kV s/s; (o) 33 kV line on ACSR WOLF from132/33 kV Makum s/s to Makum Existing 33/11 kV s/s; (p) 33kV line on ACSR WOLF from 132/33 kV Makum s/s to Dinjaan Existing 33/11 kV s/s; (q) 33 kV line on ACSR WOLF from132/33kV Makum s/s to Tinsukhiya Existing 33/11 kV s/s; (r) 33 kV line on ACSR WOLF from132/33 kV Makum s/s to Industrial Park Existing 33/11 kV s/s; (s) Bay addition at Dibrugarh Existing 132/33 kV s/s - 1 nos.; (t) Bay addition each at following Existing 33/11 kV s/s: Chapakhowa Existing 33/11 kV s/s – 1 nos., Barapathar Existing 33/11 kV s/s -1 nos., Sarupathar Existing 33/11 kV s/s – 1 nos., Sariajhan Existing 33/11 kV s/s – 1 nos., Teok Existing 33/11 kV s/s – 1 nos., Kakojaan Existing 33/11 kV s/s – 1 nos., Zangi Existing 33/11 kV s/s -1 nos.,Pragati Existing 33/11 kV s/s – 1 nos., Makum Existing 33/11 kV s/s – 1 nos., Dinjaan Existing 33/11 kV s/s -1 nos., Tinsuhkiya III Existing 33/11 kV s/s - 1nos., Industrial park Existing 33/11 kV s/s - 1nos.	9.42	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/29/2015	07/30/2016

6c	**Distribution System Package (ASM-DMS-3)** Package includes (a) 33/11 kV Harsingha (New) s/s – 2x5 MVA; (b) 33 kV line on ACSR WOLF from 132/33 kV Tangla (New) s/s to Harsingha (New) s/s; (c) 33 kV line on ACSR WOLF from 132/33 kV Tangla (New) s/s to Paneri Existing 33/11 kV s/s; (d) 33 kV line on ACSR WOLF from 132/33 kV Tangla (New) s/s to Existing Kalaigaon 33/11 kV s/s; (e) 33 kV line on ACSR WOLF from 132/33 kV Tangla (New) s/s to Existing Khairabari 33/11 kV s/s; (f) 33 kV line on ACSR WOLF from 132/33 kV Tangla (New) s/s to Existing Tangla 33/11 kV s/s; (g) Bay addition at following Existing 33/11 kV s/s: Paneri Existing 33/11 kV s/s - 1nos., Kalaigaon Existing 33/11 kV s/s -1nos., Khairabari Existing 33/11 kV s/s - 1nos., Tangla Existing 33/11 kV s/s - 1nos.; (h) 33/11 kV Sesa (New) s/s – 2x5 MVA; (i) 33/11 kV Ramdiya (New) s/s – 2x5 MVA; (j) 33/11 kV Domdoma-Hazo (New) s/s – 2x5 MVA; (k) 33 kV line on ACSR WOLF from 132/33 kV Hazo (New) s/s to 33/11 kV Sesa (New) s/s; (l) 33 kV line on ACSR WOLF from 132/33 kV Hazo (New) s/s to 33/11 kV Ramdiya (New) s/s; (m) 33kV line on ACSR WOLF from 132/33 kV Hazo (New) s/s to 33/11 kV Domdoma-Hazo (New) s/s; (n) 33 kV line on ACSR WOLF from 132/33 kV Hazo (New) s/s to 33/11 kV Mukalmuwa Existing s/s; (o) Bay addition at 33/11 kV Mukalmuwa Existing s/s -1nos.; (p) 33/11 kV Chabipool (New) s/s – 2x10 MVA; (q) Bay addition at Existing Paltan Bazaar s/s - 2 nos.; (r) Bay addition at Existing Judes Field s/s - 1nos.; (s) Bay addition at Existing Jail (Fency bazaar) s/s - 1nos.; (t) Bay addition at Existing Ullobari s/s - 2nos.	10.50	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/29/2015	07/30/2016

7	**Distribution System Package (ASM-DMS-4)** Package includes: (a) 33/11 kV GS Road (New) GIS s/s – 2x10 MVA; (b) 33/11kV GMC-2 (New) GIS s/s – 2x10 MVA; (c) 33/11 kV Tarun Nagar (New) GIS s/s – 2x10 MVA; (d) 33/11 kV - Arya College (New) GIS s/s – 2x10 MVA; (e) 33 kV U/G cabling from 132/33 kV Guwahati M.C. (New) s/s to GS Road (New) GIS s/s; (f) 33 kV U/G cabling from 132/33kV Guwahati M.C. (New) s/s to GMC-2 (New) GIS s/s; (g) 33 kV U/G cabling from 132/33 kV Guwahati M.C. (New) s/s to Tarun Nagar (New) GIS s/s; (h) 33 kV U/G cabling from 132/33 kV Guwahati M.C. (New) s/s to Arya College (New) GIS s/s; (i) 33 kV U/G cabling from 132/33 kV Guwahati M.C. (New) s/s to GMC Existing s/s; (j) 33 kV U/G cabling (double circuit) from 132/33 kV Guwahati M.C. (New) s/s to Ullobari Existing s/s; (k) Bay addition at Existing GMC s/s -1nos.; (l) Bay addition at Existing Ullobari s/s - 2nos.; (m) 33 kV U/G cabling from 132/33 kV Paltanbazar (New) s/s to Chabipool -(New) s/s; (n) 33 kV U/G cabling (double circuit) from 132/33 kV Paltanbazar (New) s/s to Existing Paltanbazaar s/s; (o) 33 kV U/G cabling from 132/33 kV Paltanbazar (New) s/s to Judges field Existing s/s; (p) 33 kV U/G cabling from 132/33 kV Paltanbazar (New) s/s to Jail (Fency bazaar) Existing s/s; (q) 33 kV U/G cabling (double circuit) from 132/33 kV Paltanbazar (New) s/s to Ullobari Existing s/s.	26.32	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/30/2015	06/30/2016
MANIPUR								
1	**Substation Package (MAN-SS-01)** Substation package including transformer for the following: (a) 132/33 kV Gamphajol (New) s/s; (b) 132/33 kV Thoubal (New) s/s; (c) 132 kV Imphal (PG) s/s (Extension); (d) 132/33 kV Ningthoukhong s/s (Extension); (e) 132 kV Kakching s/s (Extension); (f) 132 kV Yaingangpokpi s/s (Extension); (g) 132/33kV Kongba s/s (Extension); (h) 132 kV Churachandpur s/s (Extension); (i) 132/33 kV Rengpang s/s (Augmentation); (j) 132/33 kV Jiribam s/s (Augmentation)	10.21	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	11/18/2015	7/30/2016
2	**Substation Package (MAN-SS-02)** Substation package including transformer for: (a) 132/33 kV Tamenglong (New) s/s; (b) 132/33 kV Rengpang s/s (Extension); (c) 132/33 kV Ukhrul s/s (Augmentation)	3.53	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	09/01/2016	03/31/2017

3	**Turnkey Tower Package (MAN-TW01)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 132 kV D/C Imphal (Powergrid)-Ningthoukhong TL; (b) 132 kV S/C (on D/C Tower) Kakching-Thoubal TL; (c) LILO of 132 kV S/C Yurenbam (Imphal)-Karong at Gamphajol TL; (d) stringing of second circuit of 132 kV D/C Yaingangpokpi-Kongba; (e) stringing of second circuit of 132 kV D/C Kakchin-Kongba; (f) stringing of second circuit of 132 kV D/C Kakchinn-Churachandpur; (g) renovation of Yurenbum-Karong-Mao section of 132 kV S/C Yurenbum-Karong-Kohima	11.07	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	12/2/2016	3/1/2017
4	**Turnkey Tower Package (MAN-TW02)** Turnkey tower package including conductor, insulators, earth wire/OPGW, hardwire fitting and accessories for conductor and earth wire/OPGW for (a) 132 kV S/C (on D/C tower) Rengpang – Tamenlong line.	1.73	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	09/01/2016	03/31/2017
5	**Distribution System Package (MAN-DMS-01) GIS + AIS** Package includes: (a) Andro with 1 bay new s/s - 2x3.15 MVA; (b) Pishum (GIS) with 1 bay new s/s - 2x10 MVA; (c) Hiyangthang with 2 bay new s/s -2x3.15MVA; (d) Takyel with 1 bay new s/s - 2x5MVA; (e) Keithelmanbi 33/11 kV s/s, 2x5 MVA; (f) Lamphel 33/11 kV s/s, 2x10 MVA; (g) Top Khonganggkhong 33/11 kV s/s, 2x5 MVA; (h) 33 kV line on ACSR Raccoon from Existing Mongsangei s/s; (i) Pishum (GIS) new s/s - U/G + O/H with ACSR WOLF; (j) LILO of existing Yurembam-Mayang Imphal line at Hiyangthang new s/s; (k) Line on ACSR Raccoon from existing Iroisemba s/s to new s/s; (l) Keithelmanbi to 132/33 kV s/s at Yurembam; (m) Lamphel to 33/11 kV s/s at Iroishemba; (n) Khonganggkhong to 132/33 kV s/s at Kongba; (o) Bay addition at Existing Mongsangei s/s -1nos.; (p) Bay Addition at Existing Iroisemba s/s - 1 nos.; (q) Bay addition at Existing 132/33 kV Chandel - 1nos.; (r) Augmentation - Thoubal - Addition of 1x5 MVA; (s) Augmentation - Wangjing - Addition of 1x3.15 MVA; (t) Augmentation - Leimakhong - Addition of 2x5 MVA; (u) Augmentation – Kangpokpi - Addition of 1x3.15 MVA.	11.20	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	05/30/2016	10/01/2016

6a	**Distribution System Package (MAN-DMS-02)** Package includes: (a) Kwakta with 2 bay new s/s - 2x3.15 MVA; (b) LILO of existing Moirang-Moirang Khunou line at Kwakta new s/s; (c) Leimapokam with 1 bay new s/s - 2x5 MVA; (d) Line on ACSR Raccoon from existing Nambol s/s to Thangal new s/s; (e) Bay Addition at existing Nambol s/s - 1 nos.; (f) Augmentation - Ningthoukhong - Addition of 2x5 MVA; (g) Augmentation – Yangangpokpi - Addition of 2x5 MVA; (h) Augmentation – Nambol - Addition of 1x5 MVA; (i) Augmentation - Khwarakpam - Addition of 1x3.15 MVA; (j) Augmentation - Moirang Khunou - Addition of 2x5 MVA; (k) Augmentation – Jiribam - Addition of 2x5 MVA; (l) Augmentation – Khoupum - Addition of 2x5 MVA; (m) Augmentation –Tamenglong - Addition of 1x5 MVA.	5.54	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	05/26/2016	10/1/2016
6b	**Distribution System Package (MAN-DMS-03)** Package includes: (a) Porompat with 1 bay new s/s - 2x5 MVA; (b) Line on ACSR Raccoon from existing 33/11 kV s/s Khuman Lampak to Porompat new s/s; (c) Bay Addition at existing 33/11 kV Khuman Lampak s/s - 1 no,; (d) Thangal with 1 bay new s/s - 2x3.15 MVA; (e) Line on ACSR Raccoon from existing Khoupom s/s to Thangal new s/s; (f) Bay Addition at existing Khoupom s/s -1 nos.; (g) Augmentation – Napetpalli - Addition of 1x5 MVA; (h) Augmentation – Kamjong - Addition of 1x5 MVA; (i) Augmentation – Saikul - Addition of 1x3.15 MVA; (j) Augmentation – Litan - Addition of 1x3.15 MVA; (k) Augmentation - New Chayang - Addition of 1x3.15 MVA; (l) Augmentation - Khuman Lampak - Addition of 3x10 MVA.	4.97	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	11/19/2015	03/18/2016
6c	**Distribution System Package (MAN-DMS-04)** Package includes: (a) Sanjanbam with 1 bay new s/s - 2x5 MVA; (b) Line on ACSR Raccoon from existing Napetpalli s/s to Sanjanbam new s/s; (c) Bay Addition at existing Napetpalli s/s -1 nos.; (d) Tuiliphai with 2 bay new s/s - 2x3.15 MVA; (e) LILO of existing 33 kV Copur -Singhat line at Tuiliphai new s/s; (f) Augmentation – Karong - Addition of 1x5 MVA; (g) Augmentation – Tadubi - Addition of 1x3.15 MVA; (h) Augmentation – Maram - Addition of 1x3.15 MVA.	3.63	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	11/19/2015	03/18/2016

MEGHALAYA								
1	**Substation Package (MEG-SS-01)** Package includes Transformer for the following: (a) 132/33 kV Mynkre (New) s/s; (b) 132/33 kV Phulbari (New) s/s; (c)132 kV Ampati s/s (Extension)	8.42	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/06/2015	06/30/2016
2	**GIS Substation Package (MEG-SS-02)** Package includes Transformer for the following: (a) 220/132/33 kV New Shillong (New) s/s; (b) 220/132 kV Mawngap s/s (upgrade); (c) 220 kV Byrnihat s/s (Extension)	23.44	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/26/2015	06/15/2016
3a	**Turnkey Tower Package (MEG-TW01)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 220 kV D/C Kiling (Byrnihat)-MAWNGAP-New Shillong TL	19.55	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/12/2015	06/30/2016
3b	**Turnkey Tower Package (MEG-TW02)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) LILO of both circuit. of 132 kV D/C Mlhep-Khliehriat TL at Mynkre; (b) 132 kV D/C Phulbari-Ampati TL	10.74	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/12/2015	06/30/2016
4a	**Distribution System Package (MEG-DMS-01)** Package includes (a) new 33/11 kV, 1x5 MVA s/s at Rymbai; (b) new 33/11 kV, 2x5 MVA s/s at Mynkre; (c) new 33/11 kV, 1x5 MVA s/s at Lumshnong; (d) new 33/11 kV, 2x10 MVA s/s at Latyrke; (e) 33 kV S/C overhead line (New) between proposed 132/33 kV S/S at Mynkre to Mynkre ; (f) proposed 132/33 kV s/s at Mynkre to Rymbai ; (g) proposed 132/33 kV s/s at Mynkre to Lumshnong; (h) proposed 132/33 kV s/s at Mynkre to Latykre.	5.75	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/29/2015	06/30/2016

4b	**Distribution System Package (MEG-DMS-02)** Package includes (a) new 33/11 kV, 1x5 MVA s/s at Rajballa Bhaitbari; (b) new 33/11 kV, 1x5 MVA s/s at Chibinang; (c) new 33/11 kV, 1x5 MVA s/s at Raksambre; (d) 33 kV S/C overhead line (New) between (i) proposed 132/33 kV s/s at Phulbari to Rajballa Bhaitbari, (ii) proposed 132/33 kV s/s at Phulbari to Chibinang, (iii) existing 33/11 kV s/s at Tikrila to Raksambre, (iv) proposed 132/33 kV s/s at Phulbari to existing Phulbari 33/11 kV s/s, (v) proposed 132/33 kV s/s at Phulbari to Tapping point on existing Tikrila-Phulbari line, (vi) re-conductoring (from Racoon to Wolf): part of existing 33 kV Tikrila-Phulbari line from tapping point to Tikrila s/s; (e) new 33 kV line bay at existing Tikrila 33/11 kV s/s for new 33 kV s/s at Raksambre; (f) new 33 kV line bay at existing Phulbari 33/11 kV s/s for line to proposed 132/33 kV s/s at Phulbari; (g) capacity augmentation of existing 33/11kV s/s at Phulbari from 2x2.5MVA to 2x5MVA.	5.77	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/29/2015	06/01/2016
4c	**Distribution System Package (MEG-DMS-03)** Package includes (a) new 33/11 kV, 2x10 MVA s/s at Mawpat; (b) new 33/11 kV, 2x10 MVA s/s at New Shillong; (c) new 33/11 kV, 2x7.5 MVA s/s at Mawryngkneng; (d) new 33/11 kV, 2x5 MVA s/s at Mawkynrew; (e) 33 kV S/C overhead line (new) between (i) proposed 132/33 kV s/s at New Shilong to Mawpat, (ii) existing 33/11 kV s/s at SE falls to Mawpat, (iii) proposed 220/132/33 kV s/s at New Shillong to New Shillong, (iv) proposed 220/132/33 kV s/s at New Shillong to Mawryngkneng, (v) LILO of existing Jowai-Landnongkrem line to Mawryngkneng, (vi) existing 33/11 kV s/s at Jongksha-Mawkynrew; (vii) re-conductoring (from Racoon to Wolf): existing Jowai-Landonogkrem-Jongksha line; (f) new 33 kV line bay at existing 33/11 kV s/s at SE falls for new 33 kV s/s at Mawpat; (g) new 33 kV line bay at existing 33/11 kV s/s at Jongksha for new 33 kV s/s at Mawkynrew; (h) capacity augmentation of existing 33/11 kV s/s at SE Falls from 2x5MVA to 2x10MVA.	8.49	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/29/2015	06/01/2016
MIZORAM								
1a	**Substation Package (MIZ-SS-01)** Package includes Transformer for the following: (a) 132/33 kV Lungsen (New) s/s; (b) 132/33 kV Lunglei s/s (Extension)	5.60	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	4/01/2016	07/30/2016

1b	**Substation Package (MIZ-SS-02)** Package includes Transformer for the following: (a) 132/33 kV W.Phaileng (New) s/s; (b) 132 kV Marpara (New) s/s	6.96	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	12/01/2016	6/30/2017
2a	**Turnkey Tower Package (MIZ-TW01)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 132 kV S/C on D/C Tower-W.Phaileng-Marpara	4.63	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/06/2016	6/30/2017
2b	**Turnkey Tower Package (MIZ-TW02)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 132 kV S/C on D/C Tower Lungsen-Chawngte line; (b) 132 kV S/C on D/C Tower Chawngte-S.Bungtlang line	8.85	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/06/2016	7/30/2016
3	**Distribution System Package (MIZ-DMS-01)** Package includes: (a) 33/11 kV South Bungtlang with 3 bay (Proposed) s/s – 2x3.15 MVA; (b) 33 kV bay addition at Existing Lungsen 33/11 kV s/s -1 no.; (c) 33 kV bay addition at Existing West Phaileng 33/11 kV s/s – 2 nos.; (d) 33 kV line on ACSR WOLF from Lungsen 132/33 kV GSS (Proposed) to Existing Lungsen 33/11 kV s/s; (e) Overhead Cable connection (two run) from Existing West Phaileng 33 /11 kV s/s to proposed West Phaileng 132/33 kV s/s.	1.41	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	05/27/2016	09/15/2016
NAGALAND								
1a	**Substation Package (NAG-SS-01)** Package includes Transformer for the following: (a) 132 kV Longnak (New) s/s; (b) 132/33 kV Longleng (New) s/s; (c) 132/33 kV Zunheboto (New) s/s; (d) 132/33 kV Wokha s/s (Extension); (e) 132/33 kV Mokokchung (state) s/s (Extension); (f) 220 kV Mokokchung (PG) GIS s/s (Extension)	13.07	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/07/2016	07/15/2016
1b	**Substation Package (NAG-SS-02)** Package includes Transformer for the following: (a) 132/33 kV secretariat complex Kohima (New) s/s; (b) 132/33 kV Pfutsero (New) s/s; (c) 132/33 kV Tuensung s/s (Extension); (d) 220/132/33 kV New Kohima s/s (Extension)	9.49	Post	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/07/2016	07/15/2016
2a	**Turnkey Tower Package (NAG-TW01)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 220 kV S/C (on D/C Tower) New Kohima-Mokokchung via Workha TL	13.12	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/06/2016	07/30/2016

2b	**Turnkey Tower Package (NAG-TW02)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) LILO of 132 kV S/C Mokokchung-Mariani at Longnak; (b) 132 kV S/C (on D/C Tower) Tuensang-Longleng; (c) 132 kV S/C (on D/C Tower) Wokha-Zunheboto-Mokokchung	14.06	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	12/01/2016	03/01/2017
2c	**Turnkey Tower Package (NAG-TW03)** Package includes conductor, insulators, earth wire/OPGW, hardware fitting, and accessories for conductor and earth wire for (a) 132 kV D/C New Kohima (Zadima)-New Secretariat Complex; (b) LILO of 132 kV S/C Kohima-Workha at New Kohima; (c) LILO of both circuits of 132 kV D/C Kohima-Meluri (Kiphire) line at Pfutsero.	6.45	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	12/01/2016	03/01/2017
3a	**Distribution System Package (NAG-DMS-01)** Package includes (a) Longtho with 1 bay (new) s/s-2x 5 MVA; (b) augmentation at Mangkolemba existing s/s—addition of 1x5 MVA; (c) tapping of 33 kv existing mokokchung-Mariani line at Longtho (new) s/s; (d) LILO (ACSR-Raccoon) of Mokochung-Mariani 33 kV existing line at Longnak 132/33 kV(new); (e) Longleng Town with 1 bay (new) s/s-2x5 MVA; (f) augmentation at Changtongya existing s/s—addition of 1x5 MVA; (g) 33 kV line on ACSR Raccoon from 132/33 kV Longleng (new) s/s to Longleng Town with 1 bay (new) s/s.	3.57	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/21/2016	3/31/2017

3b	**Distribution System Package (NAG-DMS-02)** Package includes (a) Zunheboto south point with 1 bay (new) s/s-2x5 MVA; (b) augmentation at Suruhuto existing s/s - addition of 1x5 MVA; (c) 33 kV line from Zunheboto (new) 132/33 kV s/s to Zunheboto south point with 1 bay (new) s/s; (d) 33 kV line from Akulo Existing s/s to Suruhuto existing s/s; (e) bay addition at Akulo existing s/s - 1 nos; (f) bay addition at Suruhuto existing s/s - 1 nos; (g) augmentation at Wokha Power House existing s/s—addition of 1x5 MVA; (h) augmentation at Chukitong existing s/s - addition of 1x5 MVA; (i) augmentation at Tseminyu existing s/s - addition of 1x5 MVA; (j) augmentation at Pughoboto existing s/s - addition of 1x5 MVA; (j) Mokochung Town Power House with 1 bay (new) s/s - 2x10 MVA; (k) Mokochung Town Hospital Area with 1 bay (new) s/s - 2x5 MVA; (l) bay addtion at Pughoboto existing s/s - 1 nos.; (m) 33 kV line from Torogonyu s/s to Pughoboto existing s/s; (n) 33 kV line on ACSR Raccoon/Hare from existing Mokochung 66/33 kV s/s to Mokochung Town Power House (new) s/s; (o) 33 kV line on ACSR Raccoon/Hare from existing Mokochung 66/33 kV s/s to Mokochung Town Hospital Area with 1 bay (new) s/s; (p) bay addition at existing Mokochung 66/33 kV s/s - 1 nos..	5.53	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/21/2016	3/31/2017
3c	**Distribution System Package (NAG-DMS-03)** Package includes (a) Lalamati with 1 bay (new) s/s - 2x5 MVA; (b) augmentation at ITI Kohima replacement of existing (2x5 MVA by 2x10 MVA); (c) Zhadima (New Kohima) with 1 bay (new) s/s -2x2.5 MVA; (d) augmentation at Botsa - addition of 1x5 MVA; (e) 33 kV line on ACSR Raccoon from Kohima 132/33 kV (New) s/s to Zhadima (New Kohima) (new) s/s; (f) Pfutsero with 1 bay (new) s/s - 2x5 MVA; (g) augmentation at Chakabhama - addition of 1x5 MVA; (h) 33 kV line on ACSR Raccoon from 132/33 kV Pfutsero (New) s/s to Pfutsero (new) s/s.	3.24	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/21/2016	08/01/2017

3d	**Distribution System Package (NAG-DMS-04)** Package includes (a) Padam Pukhri with 1 bay (new) s/s - 2x10 MVA; (b) augmentation at industrial state existing s/s - addition of 1x10 MVA; (c) augmentation at Refferal Hospital state existing s/s - addition of 1x10 MVA; (d) 33 kV line on ACSR Wolf from 132/66 kV existing Nagarjan s/s to Padam Pukhri (new) s/s; (e) bay addition at 132/66 kV existing Nagarjan s/s - 1 nos.; (f) Tizit with no bay (new) s/s - 2x5 MVA in campus of 66/33 kV Tizit s/s (just completed).	2.81	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	01/21/2016	08/01/2017
TRIPURA								
1a	**Substation Package (TRP-SS-01)** Substation Package includes Transformer and LD&C equipment for the following: (a) 132/33 kV Belonia (New) s/s; (b) 132/33 kV Bagafa (New) s/s; (c) 132/33 kV Sabroom (New) s/s; (d)132/33 kV Satchand (New) s/s	22.17	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/19/2015	08/15/2016
1b	**Substation Package (TRP-SS-02)** Substation Package including Transformer for the following: (a) 132/33 kV Rabindra Nagar (New) s/s; (b) 132/33 kV Gokul Nagar (New) s/s; (c) 132/33 kV Rokhia s/s (Extn); (d) 132/33 kV Udaipur s/s (Extension); (e) 132/33 kV Jirania s/s (Augmentation)	18.06	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/19/2015	08/15/2016
1c	**Substation Package (TRP-SS-03)** Substation Package including Transformer for the following: (a) 132/33 kV Mohonpur (New) s/s; (b) 132/33 kV Manu (New) s/s; (c)132/33 kV Amarpur (New) s/s; (d) 132/33 kV Kailasahar s/s (Extension); (e) 132/33 kV Dharmanagar s/s (Extension); (f) 132/33 kV Ambassa s/s (Augmentation); (g) 132/33 kV Dhalabil (Khowai) s/s (Augmentation)	27.14	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/19/2015	08/15/2016
2a	**Tower Package (TRP-TW01)** Package includes (a) 132 kV D/C Bagafa-Belonia TL; (b) 132 kV D/C Belonia-Sabroom line (to be charged at 66 kV); (c) 132 kV S/C (on D/C Tower) Bagafa-Satchand TL; (d) 132 kV interconnection portion of 132 kV S/C Sabroom-Satchand TL at Sabroom end (e) 132 kV interconnection portion of 132 kV S/C Sabroom-Satchand TL at Satchend end.	9.18	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/16/2015	7/15/2016
2b	**Tower Package (TRP-TW02)** Package includes (a) 132 kV D/C Rabindranagar-Rokhia line; (b) 132 kV D/C Rabindranagar-Belonia line; (c) 32 kV D/C Udaipur-Bagafa TL 132 kV D/C; (d) Surjyamaninagar-Rokhia 132 kV line at Gokulnagar.	11.70	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/16/2015	7/15/2016

2c	**Tower Package (TRP-TW03)** Package includes (a)132 kV D/C Kailashadar-Dharamnagar line; (b) LILO of 132 kV Agartala(79 Tilla)-Dhalabil TL at Mohanpur; (c) 132 kV D/C Udaipur-Amarpur TL; (d) LILO of 132 kV S/C Ambassa-P.K. Bari Trans. line at Manu; (e) 132 kV interconnection portion from Manu (old-existing) s/s to Manu (new) s/s for charging of 132 kV S/C Manu-Chawmanu TL.	8.57	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/16/2015	7/15/2016
3a	**Distribution System Package (TRP-DMS-01)** Package includes (a) Karbook 33/11 kV s/s with 2 bay - 2x5 MVA; (b) Muhuripur 33/11 kV s/s with 2 bay - 2x5 MVA; (c) Dalak (Chelagang) 33/11 kV s/s with 2 bay - 2x5 MVA; (d) Garjee 33/11 kV s/s with 2 bay - 2x5 MVA; (e) Chittamara 33/11 kV s/s with 2 bay - 2x5 MVA; (f) Maharani 33/11 kV s/s with 2 bay - 2x5 MVA; (g) Chechua 33/11 kV s/s with 2 bay - 2x5 MVA; (h) Line from Karbook to LILO of existing Tirthamukh - Silachari line; (i) Line from Muhuripur to LILO of existing Jolaibari - Bagafa line; (j) Line from Dalak (Chelagang) to Proposed Amarpur 132/33 kV s/s; (k) Line from Dalak (Chelagang) to Jatanbari Existing 33/11 kV s/s; (l) Line from Chittamara to Belonia Existing 33/11 kV s/s; (m) Line from Chittamara to Garjee 132/33 kV s/s; (n) Line from Maharani to Existing Udaipur 132/33 kV s/s; (o) Line from Maharani to Garjee 33/11 kV s/s; (p) Line from Chechua to Proposed Amarpur132/33 kV s/s; (q) Reconductoring from ACSR Dog to Wolf from Jolaibari to Bagafa; (r) Reconductoring from ACSR Dog to Wolf from Silachari to Tirthamukh; (s) Rani Existing 33/11 kV s/s 1x3.15 to 2x5 MVA - 1 no.; (t) Jolaibari Existing 33/11 kV s/s from 1x3.15 to 2x7.5 MVA - 1 no.; (u) Jolaibari Existing 33/11 kV s/s; (v) Bay Addition at Jatanbari Existing 33/11 kV s/s - 1 no.; (w) Bay Addition at Udaipur 132/33 kV s/s – 1 no.; (x) Bay Addition at Belonia Existing 33/11 kV s/s - 1 no..	15.12	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/15/2015	08/30/2016

3b	**Distribution System Package (TRP-DMS-03)** Package includes (a) Sekerkote 33/11 kV, 2x5 MVA s/s with 2 bay -1nos.; (b) Golaghati 33/11 kV, 2x5 MVA s/s with 2 bay -1nos.; (c) Durganagar 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (d) Nidaya 33/11 kV, 2x5 MVA s/s with 2 bay – 1 nos.; (e) Nalchar 33/11 kV, 2x5 MVA s/s with 2 bay -1nos.; (f) Line from Sekerkote to LILO of existing Badharghat - Jangalia line; (g) Line from Golaghati to Proposed Gokul Nagar 132/33 kV s/s; (h) Line from Golaghati to Takarjala existing 33/11 kV s/s; (i) Line from Durganagar to Proposed Gokul Nagar 132/33 kV s/s; (j) Line from Durganagar to Madhupur existing 33/11 kV s/s; (k) Line from Nidaya to Kathalia Existing 33/11 kV s/s; (l) Line from Nidaya to Proposed Radhanagar 33/11 kV s/s; (m) Line from Nalchar to Melagarh Existing 33/11 kV s/s; (n) Line from Nalchar to Bishramganj Existing 33/11 kV s/s; (o) Line from Tapping at Madhupur-Jangalia line to Proposed Gokul Nagar 132/33 kV s/s; (p) Line from Jangalia to Bishramganj; (q) Reconductoring from ACSR Dog to Wolf from Badharghat to Jangalia; (r) Reconductoring from ACSR Dog to Wolf from Proposed Rabindranagar 132/33 kV s/s to Kathalia; (s) Reconductoring from ACSR Dog to Wolf from Proposed Rabindranagar 132/33 kV s/s to Melaghar; (t) Reconductoring from ACSR Dog to Wolf from Badharghat to SM Nagar; (u) Reconductoring from ACSR Dog to Wolf from SM Nagar to Takarjala; (v) Capacity Augmentation at Takarjala Existing 33/11 kV s/s from 2x1.6 to 2x5 MVA - 1 nos.; (w) Capacity Augmentation at Madhupur Existing 33/11 kV s/s from 1x5 to 2x5 MVA - 1 nos.; (x) Capacity Augmentation at Melaghar Existing 33/11 kV s/s from 1x7.5 to 2x7.5 MVA - 1 nos.; (y) Capacity Augmentation at Kathalia Existing 33/11 kV s/s from 1x7.5 to 2x7.5 MVA -1 nos.; (z) Bay Addition at Bishramganj -1 no.; (aa) Bay Addition at Jangalia – 1 no.; (ab) Bay Addition at Takarjala existing 33/11 kV s/s – 1 no.; (ac) Bay Addition at Madhupur existing 33/11 kV s/s – 1 no.; (ad) Bay Addition at Kathalia Existing 33/11 kV s/s – 1 no.; (ae) Bay Addition at Melagarh Existing 33/11 kV s/s – 1 no.; (af) Bay Addition at Bishramganj Existing 33/11 kV s/s - 1 no..	14.41	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/15/2015	08/30/2016

3c	**Distribution System Package (TRP-DMS-05)** Package includes (a) Tilla Bazar 33/11 kV, 2x5 MVA s/s with 1 bay – 1 nos.; (b) Jawhar Nagar 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (c) Chailengta 33/11 kV, 2x5 MVA s/s with 2 bay – 1 nos.; (d) Dhumachhera 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (e) 33/11 kV, 2x5 MVA s/s with 2 bay -1 nos.; (f) Durga Chowmohani 33/11 kV, 2x5 MVA s/s with 2 bay - 1 nos.; (g) Line from Jawhar Nagar to Ambassa existing 132/33 kV s/s; (h) Line from Chailengta to LILO of existing Chhamanu-Manu line; (i) Line from Dhumachhera to Proposed Jawhar Nagar 33/11 kV s/s; (j) Line from Dhumachhera to Proposed Manu 132/33 kV s/s; (k) Line from 82 mile to Proposed Manu 132/33 kV s/s; (l) Line from 82 mile to P K Bari Existing 132/33 kV s/s; (m) Line from Tilla Bazar to Kalaisahar existing 132/33 kV s/s; (n) Line from tapping at Chawmanu - Manu line to Proposed Manu 132/33 kV s/s; (o) Line from Durga Chowmohani to LILO of existing Salema - Kamalpur Line; (p) Reconductoring from ACSR Dog to Wolf from Ambassa to Teliamura; (q) Capacity Augmentation at Gandacherra Existing 33/11 kV s/s from 1x5 to 2x5 MVA - 1 nos.; (r) Capacity Augmentation at Chawmanu Existing 33/11 kV s/s from 2x1.6 to 2x5 MVA - 1 nos.; (s) Capacity Augmentation at Rangrung Existing 33/11 kV s/s from 1x3 to 2x5 MVA - 1 nos.; (t) Gandacherra Existing 33/11 kV s/s; (u) Chawmanu Existing 33/11 kV s/s; (v) Bay Addition at P K Bari Existing 132/33 kV s/s – 1 no.; (w) Bay Addition at Kalaisahar existing 132/33 kV s/s – 1 no..	12.64	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/15/2015	08/30/2016

4a	**Distribution System Package (TRP-DMS-02)** Package includes (a) Ekinpur 33/11 kV, 2x5 MVA s/s with 1 bay – 1 nos.; (b) Manughat 33/11 kV, 2x5 MVA s/s with 2 bay – 1 nos.; (c) Rupaichari 33/11 kV, 2x5 MVA s/s with 2 bay – 1 nos.; (d) Barpathari 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (e) Gabardi 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (f) Srinagar 33/11 kV, 2x5 MVA s/s with 3 bay - 1nos.; (g) Line from Manughat to Proposed Sabroom 132/33 kV s/s; (h) Line from Srinagar to Proposed Manughat 33/11 kV s/s; (i) Line from Srinagar to Proposed Satchand 132/33 kV s/s; (j) Line from Srinagar to Tapping point on existing Belonia – Hrishyamukh 33 kV line; (k) Line from Rupaichari to Proposed Satchand 132/33 kV s/s; (l) Line from Ekinpur to Rajnagar Existing 33/11 kV s/s; (m) Line from Barpathari to LILO of existing Belonia - Rajnagar line; (n) Line from Silachari Existing 33/11 kV s/s to Jolaibari Existing 33/11 kV s/s; (o) Line from Proposed Satchand 132/33 kV s/s to Jolaibari Existing 33/11 kV s/s; (p) Line from Proposed Sabroom 132/33 kV s/s to Proposed Rupaichari 33/11 kV s/s; (q) Line from Gabardi to LILO of existing Suraj Mani Nagar - Takarjala line; (r) Reconductoring from ACSR Dog to Wolf from Belonia to Hriyshmukh; (s) Reconductoring from ACSR Dog to Wolf from Belonia to Rajnagar; (t) Capacity Augmentation at Hrishyamukh Existing 33/11 kV s/s from 1x3.15 to 2x5 MVA - 1 nos.; (u) Capacity Augmentation at Rajnagar Existing 33/11 kV s/s from 1x3.15 to 2x5 MVA - 1 nos.; (v) Hrishyamukh Existing 33/11 kV s/s; (w) Rajnagar Existing 33/11 kV s/s; (x) Bay Addition at Silachari Existing 33/11 kV s/s – 1 no.; (y) Bay Addition at Rajnagar Existing 33/11 kV s/s – 2 no..	14.88	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/15/2015	09/15/2016

4b	**Distribution System Package (TRP-DMS-04)** Package includes (a) Simna 33/11 kV, 2x5 MVA s/s with 2 bay -1 nos.; (b) Barkathal 33/11 kV, 2x5 MVA s/s with 2 bay -1 nos.; (c) Bamutia 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (d) Champak Nagar 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (e) Mungiakami 33/11 kV, 2x5 MVA s/s with 2 bay – 1 nos.; (f) Taidu 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (g) Lembucherra 33/11 kV, 2x5 MVA s/s with 3 bay - 1nos.; (h) Khowai 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (i) ADC Head Qtr 33/11 kV, 2x5 MVA s/s with 2 bay - 1nos.; (j) Ranirbazar 33/11 kV, 2x5 MVA s/s with 2 bay -1 nos.; (k) Line from Khowai to Dhalabil existing 132/33 kV s/s; (l) Line from Khowai to Ampura s/s (under RGGVY); (m) Line from Simna to Hezamara existing 33/11 kV s/s; (n) Line from Simna to Tapping point on Mohanpur - Hezamara existing 33 kV feeder; (o) Line from Barkathal to Hezamara existing 33/11 kV s/s; (p) Line from Barkathal to Proposed Mohanpur 132/33 kV s/s; (q) Line from Bamutia to Durjoynagar existing 33/11 kV s/s; (r) Line from Bamutia to Proposed Lembucherra 33/11 kV s/s; (s) Line from Lembucherra to LILO of existing Agartala - Mohanpur line; (t) Line from Champak Nagar to Jirania Existing 132/33 kV s/s; (u) Line from Ranirbazar to LILO of existing Khayerpur - Jirania line; (v) Line from ADC Head Qtr to Jirania Existing 132/33 kV s/s; (w) Line from ADC Head Qtr to Proposed Champak Nagar 33/11 kV s/s; (x) Line from Dhalabill to Hezamara existing 33/11 kV s/s; (y) Line from Mungiakam to LILO of Ambassa - Teliamura line; (z) Line from Taidu to Existing 132/33 kV Teliamura s/s; (aa) Line from Taidu to Chechua; (ab) Reconductoring from ACSR Dog to Wolf from Teliamura to Kalyanpur; (ac) Reconductoring from ACSR Dog to Wolf from Dhalabill to Kalyanpur; (ad) Reconductoring from ACSR Dog to Wolf from Mohanpur to Hezamara; (ae) Reconductoring from ACSR Dog to Wolf from Mohanpur to Agartala; (af) Reconductoring from ACSR Dog to Wolf from Khayerpur to Jiranai; (ag) Capacity Augmentation at Hezamara Existing 33/11 kV s/s from 1x3.15 to 2x5 MVA - 1 nos.; (ah) Capacity Augmentation at Khayerpur Existing 33/11 kV s/s from 1x7.5 to 2x7.5 MVA - 1 nos.; (ai) Bay Addition at Durjoynagar existing 33/11 kV	20.32	Prior	Open/ International	RFB Plant - BAFO	Lowest evaluated cost	10/15/2015	09/15/2016

	s/s – 1 no.; (aj) Bay Addition at Ampura s/s (under RGGVY) – 1 no.; (ak) Bay Addition at Existing 132/33 kV Teliamura s/s – 1 no.; (al) Bay Addition at Dhalabil existing 132/33 kV s/s – 2 no.; (am) Bay Addition at Jirania Existing 132/33 kV s/s – 2 no.; (an) Bay Addition at Hezamara existing 33/11 kV s/s – 3 no..							

Note: All Sub-station packages also includes Communication Equipment

III. Selection and Employment of Consultants

46. Consultancy services requirement will be identified during the project period.

Environmental and Social (including Safeguards)

47. The primary responsibility of detailed planning, design, and implementation of the environmental and social aspects of the project is integral to POWERGRID's role as the IA. Given that the assets financed by the project will be transferred to the respective state power utilities and departments, the states' early and deep involvement is envisaged in the project's environmental and social activities. It will be enabled through the state-level project implementation units. SPCUs have been set up where states will be able to deploy their identified environmental and social specialists, who can be trained through the twinning arrangement with POWERGRID staff. In addition, the states will provide active support in obtaining local- or state-level clearances for individual subprojects. These include regulatory and customary permissions as well as state-level regulatory clearances.

48. It has been discussed with POWERGRID that additional deployment of qualified environmental and social specialists will be done in the field as subprojects go into implementation in line with the requirements in each SPCU. This will include hiring project staff and regular POWERGRID staff as appropriate.

49. The contractors to be engaged by POWERGRID for implementation of the individual subprojects will be required to abide by the Environmental Management Plan (EMP) provisions that have been integrated into the Bid Documents. Specific provisions enable use of innovative arrangements like bioengineering, provision of bird guards, and so on. This is in addition to the requirements of adhering to the applicable standards for labor welfare and safety. The contractors will also be required to obtain the clearances relevant to their operations.

50. POWERGRID also has the responsibility of reporting on the progress of implementation of the environmental and social management plans in line with the ESPPF of the respective state throughout the project period. The formats for this will be a part of the Quarterly Progress Reports to be transmitted to the Bank for review and comment. In addition, where the issues need escalation, the multilevel monitoring set up with the involvement of the state governments at the state level and the MoP at the national level will be used to resolve these. Details of the Environmental and Social aspects under the project are provided in Annex 6.

Monitoring and Evaluation

51. Given the sector-level implications of the proposed project, the M&E mechanism has been established at the project, entity, and sector level as indicated at the beginning of this section. Additionally, the project-level M&E Framework involves various measures such as

- developing detailed PIPs for each participating state with a clearly defined rationale and milestones along with the related financial, procurement, technical, and implementation details; and

- monitoring the physical implementation of assets by tracking the project monitoring indicators.

ANNEX 4: IMPLEMENTATION SUPPORT PLAN

India: North Eastern Region Power System Improvement Project (P127974)

Strategy and Approach for Implementation Support

1. The strategy for implementation support has been developed based on the nature of activities involved in the project and their commensurate risk profile in accordance with the Systematic Operations Risk-Rating Tool. The Implementation Support Plan, as described below, will be a live document and will be reviewed regularly and revised, as and when required during project implementation.

2. **Technical.** The Bank will provide required support through sector specialists and institutional specialists to POWERGRID and the states on technical aspects. The implementation support will be provided through at least two implementation support missions in a year and through continuous exchange of correspondence and regular communication. Frequent use of telecommunication will be resorted to maintain a close coordination among the Bank team and the project staff.

3. **Procurement.** Implementation support will include (a) reviewing procurement documents and providing timely no objection; (b) providing detailed guidance on the Bank's Procurement Regulations to the project staff; (c) monitoring procurement progress against the detailed Procurement Plan; (d) review of contract management activities; and (e) identifying the capacity-building/training need for project staff and officials of the state power utilities and departments on procurement processing and providing training, if required. The support will be provided through regular interactions, half-yearly implementation support missions, and thematic implementation support missions, if required.

4. **Financial management.** Implementation support will review the project's FM system, including, but not limited to, accounting, reporting, and internal controls. The support will be provided through regular interactions, half-yearly implementation support missions, and thematic implementation support missions, if required.

5. **Environmental and social safeguards.** The Bank safeguards specialists in the team will supervise various activities to ensure full compliance with the Bank's operational policies/procedures and the agreed readiness criteria for subprojects related to environment and social safeguards aspects. Gender issues will be covered, as required, by a social development/gender specialist. The implementation support will be provided through regular interactions, half-yearly implementation support missions, and thematic review missions, if required.

Implementation Support Plan

6. Most of the Bank team members will be based in the India country office, including the task team leader, technical, procurement, FM, and safeguards specialists, who would facilitate timely, efficient, and effective implementation support to the client.

7. Project implementation and supervision will be conducted through the following activities:

- Project launch, to be conducted soon after the project approval, to bring all project functionaries/ officials together and ensure a clear understanding of the project scope, design, process, and responsibilities

- At least two regular supervision missions in a year during the project duration

- Intermediate technical missions by specialists, as needed

- Quarterly implementation progress reports (physical and financial progress) prepared by the project PPIU

- A midterm review once the project is around halfway in project implementation/loan tenure to review the progress and assess the need for any mid-course correction

- An Implementation Completion and Results Report at the end of the project to assess achievement toward the PDO and lessons learned

8. The main focus of implementation support is summarized in Table 4.1.

Table 4.1. Key Focus of Implementation Support

Time	Focus	Skills Needed	Resource Estimate (staff weeks)	Partner Role
First twelve months	• Investment Component A: Fiduciary and Safeguards, Preparation and implementation of contracts according to schedule • Institutional Strengthening Component B	Technical specialist	15	n.a.
		Procurement specialist	10	
		Environment specialist	9	
		Social development specialist	9	
		Financial management specialist	9	
		Institutional development specialist	12	
		Task team leader	15	
12–84 months	• Implementation of Investment Component A • Implementation of Institutional Strengthening Component B	Technical specialist	12	n.a.
		Procurement specialist	6	
		Environment specialist	9	
		Social development specialist	9	
		Financial management specialist	6	
		Social development/gender specialist	4	
		Institutional development specialist	12	
		Task team leader	15	

9. The skills mix required is shown in Table 4.2:

Table 4.2. Skill Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips (Annually)	Comments
Technical specialist	15 for the first year and then 12 annually	3	–
Institutional development specialist	12 every year	3	–
Procurement specialist	10 for the first year and then 6 annually	2	Country based
Financial management specialist	9 for the first year and then 6 annually	2	Country based
Environment specialist	9 every year	3	Country based
Social specialist	9 every year	3	Country based
Social (Gender) specialist	3 every year	1	Country based
Communications specialist	3 every year	1	Country based
Task team leader	15 every year	3	–

ANNEX 5: ECONOMIC AND FINANCIAL ANALYSIS

India: North Eastern Region Power System Improvement Project (P127974)

1. This annex discusses the rationale for public financing of the project, the value added from the Bank support and presents the analysis of the Project's development impact in terms of expected benefits and costs.

Rationale for public sector provision/financing

2. Infrastructure services are critical to eliminating extreme poverty by 2030 and boosting shared prosperity and the achievement of the Sustainable Development Goals (SDGs). At the heart of most power sector reform efforts are a set of interrelated challenges: changing the manner in which new investments are financed, increasing the efficiency and development effectiveness of those investments, and increasing operational efficiency, while addressing equity concerns as the sector expands. The six participating states have relatively small power systems (as compared to the other states in the country) and the transmission and distribution companies or departments in each of the six states are completely owned by the respective state governments and are expected to remain in public ownership in the short to medium term. The transmission and distribution sector in these six states suffers from poor operational efficiency and weak infrastructure due to limited availability of funds as well as weak institutional capacity. In addition, the consumer base of the power utilities is largely domestic, due to the limited presence of industries in the region. These difficulties are compounded by the states' challenging geography and environment. All these factors make private investment in transmission and distribution a difficult scenario in this region, even though the states are pursuing opportunities for private sector investment in generation. Most of the states have a limited resource base for revenue collection and rely on central government funds for their budgets. In such a scenario, to service the growing electricity demand in the respective states and to transmit the power that would be available through the new investments in generation, public financing is required for investments needed to upgrade the transmission and distribution network. With this approach, and concomitant efforts to improve system efficiency and reduce losses, it is anticipated that the burden on the consumers (tariffs) or the state government finances ~~is~~ would be minimized.

Value added of the Bank's support

3. According to the NER Vision 2020, accelerated economic growth in the NER will depend on developing the physical infrastructure assets base that can have a multiplier effect on development. In most states, the improvement of infrastructure services delivery, including enhanced availability of power, remains an essential condition for accelerating development and enabling the local population to benefit from economic growth and development of natural resources while ensuring a lasting political peace. The project contributes to this objective by helping improve electricity supply, transmission and distribution in the region. Increased availability of electricity will spur growth of its productive uses in the region, generating greater opportunities and leading to enhanced quality of life and inclusive growth. Upgrading and expanding the power transmission network in the NER will lead to better integration of the region with the rest of the country and contribute to the enhancement of power trade in the region. As part of the preparation of the proposed operation, an extensive diagnostic study of the power sector in the six NER states was carried out. The comprehensive study focused on financial, operational, project planning and management, project implementation, HR management, FM, and regulatory

aspects to understand the 'as-is' situation of the utilities, identify gaps in their performance and propose remedial measures. Based on this analysis, the states, with support from the Bank, prioritized a list of interventions. The list includes interventions focused on revamping or reengineering the utilities' systems and processes for better operations with the ultimate goal of improving utility performance. All these prioritized interventions will be carried out as part of the Component B on CBIS. In addition, World Bank's engagement has also been instrumental in developing the implementation/participation agreements between POWERGRID (IA) and the six states to ensure greater ownership by and capacity building of the state utilities or departments. The agreements provide enough opportunities to the state utilities and departments to build their own capacities by closely working with POWERGRID throughout the project preparation and implementation and even allows the state utilities to depute their own officials to the state specific PIUs. Lastly, the application of World Bank's and GoI's policies on environmental and social safeguards has led to the development and adoption of ESPPF by the six states, which is expected to streamline the process of safeguards management under the project and in the sector. It is worth noting that the World Bank has also been providing support to the various states for the identification and implementation of enabling conditions for private sector development whenever feasible.

4. *Economic Analysis:* The project interventions are expected to (a) increase the intrastate T&D capacity (up to 33 kV level) of each of the six states to carry additional electricity load and (b) reduce technical losses in the network by voltage upgrade.

5. The economic analysis for project has been conducted separately for each of the six participating states, resulting in six state-specific EIRRs because of the nature of the project. This annex first provides the detailed methodology and approach followed for economic analysis for investments in one state (Assam), which has the most complex network among the participating six states, and the final result for each of the remaining five states at the end. The same approach has been adopted for economic analysis for investments under the project in remaining five states.

Approach and Methodology - Planned Investments in Assam

6. Assam faces a continuing demand for power, rising at a rapid pace given the increasing industrialization, urbanization, big push toward increasing household connections in rural areas under the GoI scheme. According to the 18th Electric Power Survey (EPS) of the CEA, the unrestricted peak load demand in the state of Assam will grow to 1,946 MW (or 9,615 MUs) by FY18, from the current levels of approximately 1,730 MW in FY15 (or 7,900 MUs) and will continue to grow at a fast pace to more than 2,500 MW (or 12,700 MUs) by FY22.

Table 5.1. Demand Estimates for Assam Based on the 18th EPS

	FY16	FY17	FY18	FY19	FY20	FY21	FY22
Peak Load (MW)	1,741	1,817	1,946	2,080	2,222	2,373	2,534
Energy (MUs)	8,413	8,947	9,615	10,313	11,058	11,852	12,699
Deficit in Meeting Unrestricted Demand with No System Strengthening							
Peak Load (MW)	491	567	696	830	972	1,123	1,284
Energy (MUs)	1,538	2,072	2,740	3,438	4,183	4,977	5,824

7. **Transmission constraints.** Assam imports power from the central and state sector generating stations or the national grid through the 220 kV and 132 kV substations. The state's transformation capacities at these levels (220 kV and 132 kV) are the key constraints in the transmission system because of which the state has been not been able to bring power within the state even though large unmet demand exists in the state. Based on system studies conducted, the maximum peak demand that the system is able to currently meet because of the transmission constraints is only 1,250 MW, which at expected load factors translates to about 6,875 MUs.

8. **Improving power availability.** While the state is currently deficit in power availability at its network periphery, the situation is expected to change significantly with the commissioning of some key power plants in the NER. At present, the firm power available to Assam, including its share of central sector power plants, is close to 1,000 MW. Assam's power availability is expected to increase to 1,530 MW by FY18 and further increase to 2,070 MW by FY20, when six new power plants, already under construction by public sector players and the state owned generation Company, get commissioned and start operating at their peak capacities. There are additional power generation projects in which the state will have allocation of power that are expected to be constructed over the next decade. However, for the purposes of calculating the economic benefit, the conservative approach of limiting the focus to only additional power that will available to Assam for its consumption (provided the network constraints are addressed because of the planned investments under the project) from these generating stations was selected for the purposes of this analysis. Based on the approach outlined below, the economic benefit of the project in two parts is shown as Part A and Part B below.

9. **Part A.** The key benefit accrued on account of the project is because of replacement of costlier fuel that is diesel, which is being used as a coping mechanism by different consumers because of non-availability of power. Better power availability because of this project is expected to replace this costlier option of using diesel for power generation. Power generation through diesel is expensive and translates into INR 13.2 per kWh (based on average price for FY15 excluding taxes but including subsidies). While cost of grid power is assumed at INR 4 per kWh (estimated average power purchase cost for Assam for FY14–FY16 according to tariff filings of the utility with the regulator), because of technical losses in the system, assumed to be around 13.5 percent (~3.5 percent of transmission losses and 10 percent of distribution losses), effective cost of grid power is estimated at INR 4.5 per kWh. Thus, the benefit of using grid power over diesel generated power is equal to INR 11.4 per kWh, as shown in Table 5.2.

Table 5.2. Economic Costs - Grid-based Power vs. Decentralized Generation Using Diesel

Average price of diesel during FY15 excluding taxes but including subsidy (INR/liter)	42.5
Cost of grid power generation using diesel (INR/kWh)	13.2
Cost of grid power to Assam utility (INR/kWh)	4.0
Technical losses in T&D network (%)	13.5
Economic cost of grid power to Assam utility (INR/kWh)	4.5
Economic benefit (INR/kWh)	8.7

Note: The analysis assumes that there are no economic losses because of commercial losses in distribution as these losses are internal transfers between interacting entities within the same system boundary.

10. **Willingness to pay.** However, not everyone who is likely to use cheaper grid power would have used diesel earlier (because of lower willingness to pay); hence, to estimate the amount of

diesel that would be replaced by grid power, the analysis assumes that out of the consumers connected to the grid, a group accounting for only 50 percent (based on actuals of 53 percent in FY14 according to EPS estimates and estimates of Petroleum Planning and Analysis Cell, Ministry of Petroleum and Natural Gas, GoI)[26] of the energy consumed were willing to pay the cost of diesel generation. This has been factored in as shown in Table 5.3. Various scenarios have been shown to arrive at the sensitivity scenarios for lower willingness to pay.

Table 5.3. Diesel Replacement and Residual Units

Year	(a) Demand Beyond Current Transmission Capacity (MUs)	(b) Power Available Beyond Current Transmission Capacity (because of additional generation) (MUs)	Lower Bound of (a) and (b) (MUs)	Diesel Replacement by Grid Power in MUs (Willingness to Pay at 50% of Lower Bound and Adjusted for Commission Schedule (MUs)	Units Consumed Excluding Units Used for Diesel Replacement (MUs)
FY20	4,183	4,503	4,183	523	523
FY21	4,977	4,600	4,600	1,150	1,150
FY22	5,824	4,793	4,793	2,396	2,396
FY23	6,688	4,793	4,793	2,396	2,396
FY24	7,610	4,793	4,793	2,396	2,396
FY25	8,595	4,793	4,793	2,396	2,396
FY26…FY42	…	4,793	4,793	2,396	2,396
FY43	41,086	4,793	4,793	2,396	2,396

11. **Part B.** The economic benefit of the scheme is also realized by ability of the power utility in Assam to transmit and consume its allocated share of power from the new state and central sector power generating stations. However, benefits accrued under Part B have been applied to estimated number of units that will be transmitted by the new transmission system excluding the units that will go toward replacement of diesel (this will ensure that there is no double accounting in the analysis). Economic benefit for this part can be estimated to be equal to the fixed cost of generation of the new central/state-sector power generating stations. This highlights the conservative approach in arriving at the benefits. Fixed cost of generation in this case is assumed at INR 1.8 per kWh. This figure is arrived at by averaging the fixed cost of generation in thermal power plants (approximately INR 1 per kWh) and hydro power plants (approximately INR 2.5 per kWh).

[26] The unrestricted demand in the six states in the region in FY14 was 12,700 MUs (according to EPS estimates) of which only 9,940 MUs were met because of network constraints. Further, 1,640 million liters of diesel were consumed in FY14, 30 percent of which was used for power generation (all data from Petroleum Planning and Analysis Cell estimates), or roughly 1,472 MUs were met through diesel. This represents 53 percent of the unmet demand that has been met by diesel and hence a figure of 50 percent has been used for arriving at willingness to pay for diesel.

12. **EIRR.** While the above analysis in Part A and Part B is based on the new system capacity to transmit more power, it has to be noted that the states are augmenting their networks through a set of parallel projects financed through various funding sources. Thus the economic benefits calculated would also be divided between the IBRD funded project and other projects. This division has been done by estimating the number of units of power that would flow through the network because of network capacity planned to be added and augmented under this project compared to the overall network capacity additions through all the ongoing projects in the state.

Table 5.4. Transmission Capacity Addition under Various Projects

Substation Voltage Levels	Capacity Addition under this Project (MVA)*	Capacity Addition under Other Projects (from different funding sources) (MVA)
220/132 kV	760	800
132/33 kV	733	1,147

**assumes only additional MVA for substations which are being augmented*

13. Thus, the economic benefit and the project EIRR realized for the project in the case of the state of Assam is shown in Table 5.5. The base case project EIRR for the state of Assam is 52 percent.

Table 5.5. EIRR Calculations

Year	Economic Benefit from Diesel Replacement (Part A) (INR, millions)	Economic Benefit from Saving the Fixed Cost of Generation (Part B) (INR, millions)	Benefits Attributable to IBRD-funded Project (INR, millions)	Capex (INR, millions)	O&M Costs (INR, millions)	Interest on Working Capital (INR, millions)	Economic Inflow/ (Outflow) (INR, millions)
FY17	–	–	–	308	–	–	-308
FY18	–	–	–	1,387	–	–	-1,387
FY19	–	–	–	2,312	–	–	-2,312
FY20	4,571	915	2,139	3,700	214	49	-1,824
FY21	10,052	2,012	4,704	3,854	453	49	348
FY22	20,947	4,194	9,802	3,083	957	49	5,713
FY23	20,947	4,194	9,802	771	1,011	49	7,971
FY24	20,947	4,194	9,802	–	1,069	49	8,684
FY25	20,947	4,194	9,802	–	1,130	49	8,623
….	20,947	4,194	9,802	–	2,900	49	6,853
FY43	20,947	4,194	9,802	–	3,065	49	6,688
EIRR							**52%**

Note: Project capex excludes local taxes.

14. A similar analysis was conducted for each of the states, yielding EIRRs from 28 percent (for Nagaland) to 62 percent (for Mizoram). These high EIRRs are consistent with the fact that the project will help address energy shortages and remove transmission bottlenecks in these

participating states. The base case analysis does not include benefits due to lower carbon emissions (because of replacement of diesel by grid-based power). A sensitivity analysis for the EIRR on the following key parameters was also undertaken: (a) lower willingness to pay for diesel among consumers along with switching value for the same assuming minimum EIRR of 10 percent; (b) cost overruns; (c) delay in commissioning of assets; (d) combination of delayed commissioning with cost overruns; and (e) lower availability of power (because of delay in commissioning of key power plants). As can be seen from Table 5.6, the EIRR for the project in each case remains above 20 percent for all states.

Table 5.6. Base Case and Sensitivity Analysis for EIRR for the Project (values in %)

Name of State	Base Case	Willingness to Pay for Diesel Down to 40%	Switching Value for Willingness to Pay for Diesel (10% EIRR)	Cost Overrun by 10%	Delay in Project by 2 Years	Delay in Project by 2 Years and Cost Escalation by 10%	Delay in Commissioning of 2 of the Major Generation Plants by 2 Years
Assam	52	45	0	47	39	36	49
Manipur	29	24	17	26	23	21	27
Meghalaya	52	46	4	48	44	41	52
Mizoram	62	54	0	57	45	42	60
Nagaland	28	23	15	25	25	22	28
Tripura	35	31	5	33	34	32	35

15. **Additional benefits not calculated.** The project also accrues benefits from reduction in technical losses that have not been included in the analysis because of lack of any baseline data. Further, benefits from GHG reduction have been shown separately below in the PAD and not as a part of the economic analysis.

Financial Analysis of the Project

Entity-level Financial Analysis

16. According to the financing arrangements for the project, the entire capital expenditure for the project (including land and R&R costs) will now be borne by the GoI (50 percent of the expenditure to be funded through IBRD loan to GoI). The state power utilities and departments will not be contributing toward initial capital expenditure.[27]

17. As the utilities and departments would not invest any up-front capital, the financial internal rate of return has not been calculated; however, a detailed entity-level financial analysis has been conducted for the power utilities and departments in all six states to understand the impact of the project on the utility and department financials.

18. In three of the states, namely Tripura, Nagaland, and Mizoram, the power sector is integrated; that is, Generation (G), Transmission (T), and Distribution (D) are bundled into one

[27] The states may only have the liability for repayment of 5 percent of the project cost (or 10 percent of the IBRD loan) as may be agreed between GoI and the states.

entity. In the remaining three states, namely Assam, Manipur and Meghalaya, the power sector is unbundled into separate power distribution and transmission companies. However, only in the case of Assam and Meghalaya (only recently), the financial accounts have been separated for T&D companies. Hence, for the analysis, a comprehensive cumulative financial analysis treating the utilities as bundled G, T, and D companies has been undertaken for the five states while it has been undertaken separately for T&D companies in the case of Assam.

19. The main assumptions used in the financial analysis are the following:

(a) **Sale of power.** Currently, because of constraints in the transmission network in the state, it is expected that the states will not be able to draw power allocated to them (generated from central sector power generating stations) from the national grid and will have to resort to outside sales or simply forego their allocated share of power from central sector generating stations. Hence, over the near term it is assumed that sales within the state would increase only marginally because of transmission constraints and the states will sell additional power outside the state. However, because of capacity enhancements in the transmission network under the project, it is assumed that progressively the states will be able to draw more power and sales within the state have been assumed to be the lower bound of power availability and demand (according to 18th EPS estimates).

(b) **Power availability and cost of power purchase.** Power available at the state periphery has been modelled using detailed plant-wise power generation (existing and new) for each of the states. Power purchase costs have been estimated as actuals/provisional for existing plants (till FY15) and the cost for the existing plants has then been escalated at 2-3 percent each year, while simultaneously cost from new generating plants has also been incorporated. Further, escalation has been assumed a bit lower as there is a lot of spare and cheaper hydro/thermal capacity expected to come up in the region. This is also verified by the power purchase costs over the last two years where power purchase costs have increased only marginally in the six states.

(c) **T&D losses.** All the utilities suffer from high T&D losses in their distribution businesses although among themselves the utilities are at different levels of losses. Underlining a conservative approach, the T&D losses have been assumed to decrease only by 1 percent annually (over FY15 actuals) and further capped at 20 percent over the later years, with the exception of Manipur where losses have been assumed to reduce steeply by 2.5 percent Y-o-Y because of high baseline number and efforts underway in the state to reduce the losses. The project has a technical assistance component that focuses on CBIS and thus, progressive utilities might have a more aggressive T&D loss reduction trajectory. Further, it has been assumed that the state governments will continue to provide grant support to the power utilities and departments to fund a part of their operating losses (in line with the existing practice).

(d) **Capital expenditure.** Capital expenditure for each utility for the transmission and sub-transmission network has been estimated as under the project. However, capital expenditure has also been assumed in the distribution network below 33 kV, which will be necessary as the energy availability and consequently energy sales in the state increase. This capex is assumed to be funded under the GoI schemes of the erstwhile RGGVY (now

subsumed within the DDUGJY) and the R-APDRP Part B (now subsumed under the IPDS). Further, 90 percent of capex from other GoI schemes is expected to be available as grants to the utilities and departments (in line with the GoI policy on special category states of the NER).

(e) **O&M costs.** In line with inflationary trends and regulatory guidance, the O&M costs have been assumed at 5 percent of the additional capitalized expenditure (according to the yearly commissioning schedule) and are assumed to increase by 5.7 percent annually thereafter.

(f) **Tariffs.** Tariff within the state is assumed to increase by 5.7 percent annually over the FY15 base, to meet inflation and the expected increase in O&M expenses because of increase in investments for upgrading of the T&D network. The tariffs have been tapered toward later years in the case of Assam and Tripura.

20. These assumptions are also summarized in Table 5.7:

Table 5.7. Key Assumptions

Sr. No	Item	Assumptions
1	Sales	Initially only marginal increase because of network constraints. Sales over medium/long term to be the lower bound of demand and power availability. Surplus available power is assumed to be traded.
2	Power availability	Expected plant-wise power availability (from existing and expected new power plants). Power purchase costs from existing stations are assumed to escalate by 2–3 percent annually.
3	Distribution T&D losses	Assumed to reduce 1 percent year-on-year from the base case (FY15) and capped at 20 percent (except Manipur where Y-o-Y reduction has been assumed at 2.5 percent)
4	Capex	Capex has been assumed for distribution investments (commensurate with the additional units that will be sold within the state). For investments made under this project, 5 percent of the project cost has been treated as debt funded on utility and department balance sheet (at IBRD lending rates).
5	O&M expenses	Additional O&M has been assumed as 5 percent of the capex for the first year (according to the commissioning schedule) under the project and annual escalation at 5.72 percent thereafter.
6	Tariffs	A normative annual increase of 5.7 percent in tariff (similar to the O&M increase) has been assumed for sale of power within state. For sale of power outside the state, realization has been assumed the same as the average cost of power purchase for the state.

21. **Key results.** The key results from the financial analysis for each of the states are presented in Table 5.9 and are summarized below:

(a) **Current financial status.** The power utilities and departments in all the six states are incurring varying degree of losses as shown in FY15 numbers in the table. The key reason for the high losses are (i) high T&D losses, which in turn is due to high technical losses (old and dilapidated network) and high commercial losses because of inability of the utility and department to bill its consumers; (ii) low collection efficiency; (iii) high operational expenses; and (iv) tariffs not commensurate with the cost of supply.

(b) **Financial results in the near term and medium to long term.**

- **Near term.** In the near term, it is expected that the absolute losses will increase as the utilities suffer from high T&D losses in distribution and are unable to sell power within the state because of transmission constraints, thus leading to increased outside-state sales at lower tariffs.

- **Medium to long term.** After the first batch of the assets under the project are commissioned post FY18, it is estimated that the losses would increase because of additional costs toward O&M once the assets are capitalized. This trend is expected to continue over the medium term. However, after phased commissioning of most of the subprojects post FY21, sales within the state will increase and reliance on outside sales would decrease. Thus, it is estimated that the overall losses will begin to reduce rapidly and are estimated to be marginally lower for five states as compared to the base case of FY15 and only marginally higher for one state (Table 5.9) at the time of project closing.

(c) **Impact of the project in per unit losses.** The analysis yields a favorable impact when analyzed on the basis of per unit of energy sold. While the per capita energy is expected to increase two to three times because of the project, per unit losses are expected to simultaneously reduce, as is shown in Table 5.8.

Table 5.8. Per Unit Losses May Reduce even as Per Capita Consumption Will Increase Significantly
(All-India per capita consumption is 1,010 kWh, FY15)

	Assam		Manipur		Meghalaya	
	Energy Usage Per Capita (kWh)	**Losses Per Unit (INR/kWh)**	**Energy Usage Per Capita (kWh)**	**Losses Per Unit (INR/kWh)**	**Energy Usage Per Capita (kWh)**	**Losses Per Unit (INR/kWh)**
FY15	220	0.8	267	3.2	510	1.4
FY16	224	0.9	264	3.3	518	2.0
FY17	228	1.0	261	3.4	527	2.6
FY18	232	0.8	258	3.3	535	2.7
FY19	290	0.4	336	2.6	660	2.1
FY20	361	0.1	437	2.1	815	1.6
FY21	390	0.1	466	1.9	869	1.8
FY22	421	0.1	497	1.7	926	1.6
FY23	454	0.1	531	1.3	993	0.9
FY24	490	0.1	572	1.0	1073	0.6
	Mizoram		**Nagaland**		**Tripura**	
	Energy Usage Per Capita (kWh)	**Losses Per Unit (INR/kWh)**	**Energy Usage Per Capita (kWh)**	**Losses Per Unit (INR/kWh)**	**Energy Usage Per Capita (kWh)**	**Losses Per Unit (INR/kWh)**
FY15	417	3.3	350	2.0	306	0.6
FY16	419	3.2	355	2.2	308	0.7
FY17	422	4.0	361	2.7	310	0.8
FY18	425	4.1	367	2.9	284	0.7
FY19	544	3.2	391	2.9	336	0.6
FY20	669	2.6	446	2.5	444	0.3
FY21	681	2.5	486	1.9	485	0.3
FY22	692	2.4	535	1.5	531	0.3

	Assam		Manipur		Meghalaya	
	Energy Usage Per Capita (kWh)	**Losses Per Unit (INR/kWh)**	**Energy Usage Per Capita (kWh)**	**Losses Per Unit (INR/kWh)**	**Energy Usage Per Capita (kWh)**	**Losses Per Unit (INR/kWh)**
FY23	699	2.2	590	1.3	582	0.2
FY24	700	2.1	643	1.0	637	0.2

Table 5.9. Financial Analysis Key Results

	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Assam Power Distribution Company Limited										
Sales within the state (MUs)	5,476	5,575	5,676	5,779	7,213	9,006	9,717	10,483	11,310	12,206
Sales outside the state (MUs)	88	416	3,012	4,570	2,699	360	1,221	421	12	13
Average billing rate (INR/kWh)	5.6	6.1	6.4	6.8	7.2	7.6	7.8	8.0	8.3	8.5
% annual increase		9.0%	5.7%	5.7%	5.7%	5.7%	3.0%	3.0%	3.0%	3.0%
Average cost of power purchase	3.6	3.6	3.7	3.6	3.7	3.8	4.0	4.1	4.2	4.4
T&D losses (%)	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%	20.2%
Profit After Tax or PAT (INR, millions)	(5,775)	(6,074)	(6,809)	(5,434)	(3,943)	(1,281)	(1,525)	(1,264)	(909)	(851)
Assam Electricity Grid Corporation Limited										
Power wheeled (MUs)	6,859	6,983	7,109	7,238	9,034	11,280	12,171	13,130	14,166	15,288
Average wheeling charge	0.7	0.7	0.8	0.8	0.8	0.9	0.9	1.0	1.0	1.1
% annual increase		5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%	5.0%
PAT (INR, millions)	(808)	(777)	(1,074)	(914)	(775)	(431)	(12)	498	1,179	2,016
Manipur (Consolidated)										
Sales within the state (MUs)	442	456	469	483	652	881	972	1,073	1,184	1,306
Sales outside the state (MUs)	51	393	527	745	658	418	336	247	150	34
Average billing rate (INR/kWh)	3.4	3.6	3.8	4.0	4.3	4.5	4.8	5.1	5.3	5.6
% annual increase		6.4%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%
Average cost of power purchase	3.3	3.4	3.4	3.4	3.6	3.8	3.9	4.1	4.2	4.4
T&D losses (%)	42.0%	39.5%	37.0%	34.5%	32.0%	29.5%	27.0%	24.5%	22.0%	20.0%
PAT (INR, millions)	(2,444)	(2,516)	(2,501)	(2,427)	(2,529)	(2,602)	(2,580)	(2,351)	(2,038)	(1,690)
Meghalaya (Consolidated for transmission and distribution)										
Sales within the state (MUs)	979	1,009	1,039	1,070	1,337	1,672	1,806	1,950	2,106	2,275
Sales outside the state (MUs)	553	1,048	1,778	1,886	1,540	1,417	2,180	2,021	1,836	1,616
Average billing rate (INR/kWh)	5.0	5.2	5.5	5.8	6.2	6.5	6.9	7.3	7.7	8.2
% annual increase	18.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%

	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	FY23	FY24
Average cost of power purchase	6.2	6.2	6.0	6.1	6.3	6.3	6.1	6.3	6.5	6.7
T&D losses (%)	27.6%	26.6%	25.6%	24.6%	23.6%	22.6%	21.6%	20.6%	20.0%	20.0%
PAT (INR, millions)	(1,842)	(2,803)	(3,612)	(3,892)	(3,638)	(3,451)	(4,160)	(3,880)	(2,496)	(1,781)
Power and Electricity Department, Mizoram										
Sales within state (MUs)	334	341	347	354	459	573	590	607	613	614
Sales outside state (MUs)	34	31	246	251	127	(0)	0	0	0	0
Average billing rate (INR/kWh)	4.1	4.3	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.7
% annual increase		5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%
Average cost of power purchase	3.3	3.4	3.6	3.7	3.9	4.0	4.1	4.2	4.3	4.5
T&D losses (%)	27.0%	26.0%	25.0%	24.0%	23.0%	22.0%	21.0%	20.0%	20.0%	20.0%
PAT (INR, millions)	(1,514)	(1,479)	(1,860)	(1,920)	(1,921)	(1,877)	(1,874)	(1,821)	(1,705)	(1,588)
Department of Power, Nagaland										
Sales within state (MUs)	510	525	541	557	602	695	767	846	934	1,018
Sales outside state (MUs)	12	351	442	554	518	415	445	388	277	185
Average billing rate (INR/kWh)	4.2	4.5	4.7	5.0	5.3	5.6	5.9	6.2	6.6	7.0
% annual increase		5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%
Average cost of power purchase	2.7	2.8	2.9	3.0	3.1	3.2	3.3	3.4	3.5	3.6
T&D losses (%)	26.3%	25.3%	24.3%	23.3%	22.3%	21.3%	20.3%	20.0%	20.0%	20.0%
PAT (INR, millions)	(1,391)	(1,542)	(1,897)	(2,121)	(2,220)	(2,186)	(1,807)	(1,615)	(1,474)	(1,246)
Tripura State Electricity Corporation Limited										
Sales within state (MUs)	786	802	818	834	989	1,304	1,427	1,562	1,710	1,872
Sales outside state (MUs)	710	2,645	2,638	2,732	2,539	2,146	1,992	1,823	1,638	1,435
Average billing rate (INR/kWh)	5.3	5.6	5.9	6.2	6.6	7.0	7.4	7.8	8.0	8.2
% annual increase		5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	5.7%	2.7%	2.0%
Average cost of power purchase	3.3	3.6	3.7	3.8	4.0	4.1	4.2	4.4	4.5	4.6
T&D losses (in %)	30.1%	29.1%	28.1%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
PAT (INR, millions)	(728)	(801)	(912)	(714)	(790)	(566)	(596)	(507)	(493)	(469)

Impact on GHG Emissions

22. The global environmental impact of the project was assessed using the GHG accounting method. The GHG assessment is made based on the Bank's GHG Guidance Note, using a combined average emission factor of the national grid at 0.98 tCO_2 per MWh.[28]

23. The Bank guidelines for GHG emission of T&D projects were used to determine the gross and net emissions of all project investments. GHG accounting was carried out by considering emissions linked with (a) land clearing required for T&D right-of-way (RoW); (b) the requirement for equipment that uses sulfur hexafluoride (SF_6); and (c) the electricity losses in the project area. Table 5.10 summarizes the emission reduction expressed in tons per CO_2 equivalent.

Table 5.10. GHG Emissions (tons per CO_2 equivalent)

	Baseline	Post Project	Net Positive Impact
Land clearing	0	156,108	(156,108)
SF_6	0	108,683	(108,683)
Embodied emissions	0	0	0
Energy in construction	0	0	0
Generation emissions from technical losses	39,239,386	37,950,745	1,288,641
	BE2	PE2	
Total Emissions	**39,239,386**	**38,215,535**	**1,023,850**

[28] Ref: Baseline CO2 Emissions Data Ver. 09, Central Electricity Authority (CEA), Government of India (GOI); Combined Margin Emission Factor for NENWE, 2013. http://cea.nic.in/reports/planning/cdm_CO2/cdm_CO2.htm

ANNEX 6: SAFEGUARDS

India: North Eastern Region Power System Improvement Project (P127974)

1. The project is aimed at improving the availability of electricity supply within participating states in the NER. This will be achieved by constructing new and/or rehabilitating transmission, sub-transmission, and distribution lines in the six participating states. The work mainly involves (a) erecting poles for drawing lines and (b) substations for transmission/sub-transmission/distribution. The region's environmental and social characteristics are so unique it is difficult to separate one from the other, as human life is intrinsically enmeshed with the geological as well as the biophysical environ. Project preparation too has responded appropriately by treating the entire 'environ' as singular toward identifying and managing the impacts likely to occur as a result of the interventions. This has led to the preparation of an ESPPF separately for each of the six states to serve as a guiding tool for managing safeguards.

Social Safeguards Management

2. The project does require temporary and permanent use of lands. However, lands in the NER are characteristically undulating with hills and mountains. These hilly areas are predominantly inhabited by tribal people and customary laws govern land tenure. So, securing lands necessarily brings into the fore safeguard policies OP 4.12 - Involuntary Resettlement and OP 4.10 - Indigenous Peoples.

3. To ensure compliance with the policies concerning safeguards management, the project has adopted a framework approach as all the investments have not yet been identified fully. Hence, each of the six participating states has been enabled to prepare a generic framework, an ESPPF document. This framework can be adopted for all power T&D projects of the state. Essentially, the state-specific ESPPF preparation is based on POWERGRID's ESPP, which has been reviewed and accepted by the Bank for Use of Borrower Systems (Report No. 49022-IN, Project Appraisal Document, Fifth Power System Development Project, August 25, 2009), but incorporates due requirements of India's new LARR Act 2013 as well as the Indian Constitution's provision related to scheduled (tribal) areas in the NER. This annex summarizes the social provisions of the ESPPF in sections. The ESPPF in turn reflects on the processes aligning with the overall subproject cycle. The first section serves as a background and portrays in brief physical as well as sociocultural characteristics, land tenure, and governance systems prevailing in the six project states to enable better appreciation of the social safeguards aspects. Given this backdrop, the second section describes the safeguard issues and mitigation measures to address the same.

Sociocultural Characteristics of the Project Region

4. The NER of India is spread over an expanse of 171,351 km^2 and the project covers the six states of Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura. With a total population of 45.6 million (2011 census), the NER accounts for about 3.7 percent of India's total population and covers 7.9 percent of India's total geographical area. This sparsely populated region is characterized by extraordinary ethnic, cultural, religious, and linguistic diversity, with more than 160 STs (out of 630 in the country) comprising over 400 distinct sub-tribal groups, and a large and diverse nontribal population as well. The region is geographically divided into discrete plains and

hills and the dichotomy between the 'hill people' (inhabited mostly by tribal people) and the 'plains people' (majority of whom are not tribal people) is quite sharp, rendering the former 'excluded'. Given the terrain, access and communication too is quite difficult. The region has witnessed geopolitical isolation, protracted insurgency in some areas, militarization, and migration, affecting socioeconomic development. The project's six states typify the 'region' in all aspects.

5. **Regional uniqueness.** The hallmark of the political units in the NER is the diversity on account of terrain, climate, ethnicity, culture, institution, land system, language, food habits, dress, and so on. The states in the NER have evolved at different times and functions under different provisions of the Indian Constitution. The regional identity of the states as the NER is a concept based on extreme intraregional diversity.

6. **Land tenure system.** Two broad types of land tenure systems operate in the region:

(a) Revenue administration under the government operates in the plains and valleys of Assam, Manipur, and Tripura.

(b) Customary land tenure system under the village-level authority operates in the hilly states of Meghalaya, Mizoram, and Nagaland and in the hilly parts of Assam, Manipur, and Tripura. Cadastral survey is not done in these areas.

7. **Land is held almost by all.** Landless people are negligible in number. Marginal (<1 ha) and small farmers (1.0–2.0 ha) are the two dominant categories (78.92 percent). Distribution is largely egalitarian, rooted in the principle of community way of living and sharing. Operational availability of land is a small fraction of total availability in the hills. Land in these states, especially in tribal areas, is used rather broadly and includes forests as well. In Nagaland, more than 90 percent of the forests are directly controlled by traditional institutions, communities, or private individuals, whereas in Tripura, it is about 30 to 40 percent. Traditionally, the management of forest land is under the *gaonbura* or village chief in parts of Nagaland, the *doloi* in the Jaintia Hills, and the *syiem* (or raja) of the Khasi Hills in Meghalaya. In most of these traditional systems of governance, the village chief or head plays a significant role in decision making and in the effective functioning and management of village welfare.

8. **Tribal people.** Each state has a substantial number of tribal persons. It is as high as 94.4 percent in Mizoram, 86.5 percent in Nagaland, 86.1 percent in Meghalaya, 35.1 percent in Manipur, 31.8 percent in Tripura, and as low as 12.4 percent in Assam (Census 2011) (Table 6.1). Many tribes still retain traditional customs which provide an identity to them as well as a collective control over resources. Even in the case of Manipur and Tripura, a proportion of tribal people in the hill/forest areas are significantly higher, of over 90 percent.

Table 6.1. Proportion of Tribal People in Population and Major Tribes

State	STs as % of the Total State Population	No. of major STs	Major Tribes
Assam	12.4	15	Boro, Kachari, Mikir (Karbi), Lalung, Dimasa, Hmar, Hajong
Meghalaya	86.1	19	Garo, Khasi, Jaintia
Manipur	35.1	33	Naga, Kuki
Mizoram	94.4	15	Mizo

State	STs as % of the Total State Population	No. of major STs	Major Tribes
Nagaland	86.5	5	Naga, Kuki, Mikir, Garo
Tripura	31.8	19	Chakma, Garo, Khasi, Kuki, Lusai, Liang, Santhal

9. **Governance and administration.** The tribal people live in contiguous areas unlike other communities. So, an area approach was adopted for administrative and developmental purposes. Under the Constitution, 'scheduled areas' are declared by the president after consultation with the state governors. These areas have been designated to protect the interests of STs regarding their land and other social issues and are governed through provisions of either the Fifth or Sixth Schedule under the Indian Constitution. The scheduled areas of the NER are covered under the Sixth Schedule provisions and all other scheduled areas are covered by the Fifth Schedule laws.

10. **Sixth Schedule**. Historically, tribes of this region have seen 'isolationist' policies of the colonial rule, which labeled most northeast hilly tribal tracts as 'excluded' or 'partially excluded'. The colonial laws did not apply in these areas and they were ruled differently. With India's independence, the philosophy of maintaining status quo and isolation was replaced by the policies of development and integration through a separate Sixth Schedule of the Constitution. At present, the schedule applies in four states only: it almost fully covers Meghalaya and partly the states of Assam, Mizoram, and Tripura. Areas and states not covered by the Sixth Schedule provisions, Nagaland and Manipur, also have laws respecting the autonomy of traditional ways of self-governance and protecting from outside interference.

11. The Sixth Schedule provides for administration of certain tribal areas as autonomous entities. The administration of an autonomous district is to be vested in a district council and of an autonomous region, in a regional council. These councils are endowed with legislative, judicial, executive, and financial powers. These constitutionally mandated councils oversee the traditional bodies of the local tribes. Currently, the following ten autonomous councils (ACs) are functioning in these states:

Table 6.2. Autonomous Councils in the NER

State	Autonomous Councils
Assam	• The North Cachar Hills District Autonomous Council (NCHAC) • The Karbi Anglog District Autonomous Council (KAAC) • Bodoland Territorial Council (BTC)
Meghalaya	• Khasi Hills District Autonomous Council (KHAC) • Jaintia Hills District Autonomous Council (JHAC) • The Garo Hills District Autonomous Council (GHAC)
Mizoram	• The Chakma District Autonomous Council • The Mara District Autonomous Council • The Lai District Autonomous Council
Tripura	• Tripura Tribal Areas District Autonomous Council (TTADC)

12. The philosophy behind the Sixth Schedule of the Constitution is to protect tribes, their population, and their interests by constitutionally mandating a special kind of autonomous governance structure. The schedule endows these councils with extensive legislative, judicial, executive, and financial powers, the details of which are as follows:

(a) Allotment, occupation or use, or the setting apart, of land, other than any land which is a reserved forest

(b) Management of any forest not being a reserved forest

(c) Use of any canal or water course for the purpose of agriculture

(d) Regulation of the practice of *Jhum* or other forms of shifting cultivation

(e) Establishment of village or town committees or councils and their powers

(f) Any other matter relating to village or town administration, including village or town police and public health and sanitation; appointment or succession of chiefs or headmen; and inheritance of property; and marriage and divorce

13. **Tribal areas lying outside the Sixth Schedule.** As four out of six states are covered under the Sixth Schedule, the state of Nagaland and the hill districts of Manipur remain as the tribal areas outside the Sixth Schedule.

14. **Nagaland** has made significant progress in empowering the village community. The village community participates in grassroot-level development programs in close association with the traditional village chief. Communitization is an effective instrument to ensure that the institutions and services set up for their benefit operate efficiently and are accountable to the beneficiaries. The state government has declared each village authority a 'local authority' within the meaning of the Communitization Act. Nagaland is also safeguarded by the Indian Constitution - Nagaland, Article 371A, which states that no act of parliament in respect of (a) religious or social practices of the Nagas; (b) Naga customary law procedure; (c) administration of civil and criminal justice; and (d) ownership of land and its resources shall apply to the state of Nagaland unless approved by the state legislature. Similar safeguards are made for the state of Mizoram under Article 371G of the Indian Constitution.

15. **In Manipur**, the Indian Constitution has made a special provision for safeguarding the interests of tribal minorities of the state, by providing for the constitution and functions of a committee of the Legislative Assembly of the state consisting of members of that assembly elected from the hill areas of that state. With regard to regulations framed under this provision, members of the state legislature elected from the hill areas have been given powers to deliberate on legislative proposals concerning matters affecting land, water, forests, and tribal customs in such areas subjects. This apart, the state legislation (Manipur Hill Areas District Councils Act, 1971) provides for the establishment of district and village councils in the hill areas, which have been formed recently after a gap of three decades.

16. Thus, governance is a blend of traditional local as well as modern systems, but, the paramount important body is the village council whose approval or support is critical for initiating any activity in the tribal villages (refer Table 6.3 and Table 6.4)**.**

Table 6.3. Institutional Governance Structure

State	Governance Structure
Assam	Both Panchayati Raj Institutions and ACs function in the state. GP - 2,489, ZP - 20, and AC - 5
Manipur	GP - 166 and ZP - 4 and AC - 4
Meghalaya	AC functions in entire Meghalaya (AC - 3)
Mizoram	Both village council (702) and AC (3)
Tripura	GP - 537 and ZP - 4; TTADC - 1
Nagaland	Only village council (1029)

Note: GP = Gram Panchayat; ZP = Zila Parishad.
The modern and traditional systems of governance coexist in the region. The age-old traditional but unrecognized local bodies exist and functions such as Mei among the Karbis of Assam, Khullakpa among the Kaboi in Manipur, Durbar Shong among the Khasis, and Jaintias in Meghalaya.

Table 6.4. Administrative Structure for the Tribes of Project States

State	Special Constitutional Provision	Administrative Structure
Mizoram	Sixth Schedule	Three ACs of Pawi, Lakher, Chakma, and other areas without the AC
Nagaland	Article 371 A	No Autonomous District Councils
Tripura	Sixth Schedule	Tripura Tribal Area Autonomous District Council

Safeguard Issues

17. Key safeguard issues under the project relate to securing lands for the project for erecting poles (for drawing lines) as well as for the construction of substations for T&D in the tribal areas (Sixth Schedule and other scheduled areas) as well as in the nontribal plain areas taking due note of the land tenure and governance systems prevailing in a particular instance. While the erection of poles and drawing of transmission lines entails temporary usage of lands, construction of substations does require lands on a permanent basis. In this context, the project triggers two of the Bank's operational policies: (a) OP 4.10 - Indigenous Peoples and (b) OP 4.12 - Involuntary Resettlement. Given the intertwining of the two policy aspects, addressing the issues namely, measures for safeguards management are drawn in an integrated manner, intertwining not only the two social safeguards policies but also with the environmental policies, all of which are captured in the ESPPF. This essentially comprises three frameworks: (a) Part A: - Resettlement Policy Framework (RPF - Land and Structures; (b) Part B: – Compensatory Plan for Temporary Damages (CPTD); and (c) Part C: Tribal People Development Planning Framework (TPDPF).

Safeguard Management

Part A: Resettlement Policy Framework - Land and Structures

18. **Securing lands for substations.** Lands shall be secured through three methods: (a) outright purchases; (b) voluntary donations; and (c) involuntary acquisition.

19. **Outright purchases.** The following principles shall govern such purchases:

(a) The transaction takes place between willing buyers and willing sellers.

(b) Price should be based on negotiations and not fixed by the buyer.

(c) A broad-based committee shall be established separately in each state for overseeing the sale purchases and ensure that it is akin to the above agreed principles.

(d) A plan/proposal will be prepared depicting the likely purchases, which shall form the basis for review by the committee.

(e) An aggregate of such plans shall also be endorsed by the respective district councils and/or district collector.

20. **Voluntary donations.** Donating lands by individuals and/or village is quite a traditionally prevailing practice in all these states. Plans are made to ensure that donations are indeed voluntary and the same should be ascertained. Further, the following principles shall govern such transactions:

(a) Voluntariness shall be ascertained and duly documented. The land user will not be subjected to any pressure, directly or indirectly, to part with the land.

(b) The project shall ensure that there shall be no significant adverse impacts on the livelihood of the household donating the land.

(c) This should not result in any physical relocation.

(d) The land in question must be free of squatters, encroachers, share cropping, or other claims or encumbrances.

(e) The project shall engage in consultations and negotiations with the individual(s) (in the case of privately owned lands in nonscheduled areas and with the village community, in the case of communal lands) in firming up the terms and conditions related to the land donation which may include some specific 'gratitude' to the individuals and/or village. The same shall be documented and monitored for compliance.

(f) Land transfers will be complete; land title will be vested in the government/ utility.

(g) Provision will be made for redressal of grievances (if any).

(h) A plan or proposal will be prepared by the project depicting the likely donations, which shall form the basis for review by a broad based committee. The plan in the case of lands under the purview of the 'village' (communal property) shall be prepared after due consultations or endorsement from the traditional and formal village institutions as well as all sections of the village, including women.

(i) An aggregate of such plans shall also be endorsed by the respective district councils and/or district collector.

21. **Involuntary land acquisition.** Private lands in nonscheduled areas can be acquired by deploying India's recent legislation - the Right to Fair Compensation and Transparency in Land Acquisition Rehabilitation and Resettlement Act, 2013. The act has become effective from January 1, 2014 and its objectives include the following:

(a) To ensure, in consultation with institutions of local self-government and Gram Sabhas established under the Indian Constitution, a humane, participative, informed, and transparent process for land acquisition for industrialization, development of essential infrastructural facilities and urbanization with the least disturbance to the owners of the land and other affected families

(b) To provide just and fair compensation to the affected families whose land has been acquired or proposed to be acquired or are affected by such acquisition

(c) To make adequate provisions for such affected persons for their rehabilitation and resettlement

(d) To ensure that the cumulative outcome of compulsory acquisition should be that affected persons become partners in development leading to an improvement in their post-acquisition social and economic status

(e) To cover not only the title holders but also those who are likely to lose their livelihoods as a result of the project intervention induced land acquisition

22. The new act has a built-in safeguard against unnecessary land acquisitions. It has made mandatory not only undertaking of Social Impact Assessments (SIA) but also that results of the assessments to be shared with all the stakeholders and a public hearing held, which makes the process transparent and informed. The SIA shall analyze the impact of such land acquisition and the kind of R&R that is required and which shall also include compensation and assistances toward land acquisition or loss of any assets or livelihood for all categories of people being affected because of land acquisition. This also includes additional provisions, as applicable, for the STs. Subsequently, an entitlement package that includes both compensation (for land/ structure and assets to land and structure) and R&R as necessary is prepared. No acquisition of land can be made unless all compensations are paid and until R&R of the affected people is done, in consultation with the affected families/ persons.

23. Further to this, individual awards are passed and all documents are disclosed in the public domain through the local administration and on the Internet. To ward off any self-interests (from the proponents), the act has taken away the responsibility from proponents. Instead, it authorizes the state government or its authorized government agency to complete the whole process of acquisition of private land, including the SIA/SIMP, action plan for R&R, and its implementation. Responsibility of the proponents (state power utilities and departments) is limited to identification and selection of suitable land based on technical requirement and ensuring budget allocation. Entitlements with respect to compensation and R&R assistance are detailed in the ESPPF and are quite generous.

24. The new act not only embodies fully the Bank's OP 4.10, it is much more arduous, enhanced, and enriched, rendering implementation a real challenge as it involves not only a set of

systems and procedures but also establishing institutions. Given that the project is in the NER, it is an even greater challenge.

Part B: Compensatory Plan for Temporary Damages

25. **Securing lands for erecting poles - RoW.** Land requirements for erecting tower/poles for transmission/distribution lines are just minimal. All that is required is land to place the tower footing, four of which warrants an area of 4 to 6 sq. ft. Lands in respect of the RoW are not acquired as agricultural activities can continue beneath the tower. Further, line alignments are done in such a way as to avoid settlements and/or structures. Because of the inherent flexibility in locating the poles, the project shall try to avoid inhabited areas completely; hence, no relocation of population on account of TLs or distribution lines are envisaged. Thus, the actual impact is restricted to four legs of the tower and agriculture can continue after the erection. According to the existing law, land for tower/pole and RoW is not acquired and agricultural activities are allowed to continue after construction activity. However, compensations are paid to the affected persons/community for all damages, including cost of land below the tower, without acquiring the land. Thus, compensations are made in lieu of (a) land cost of tower footings; (b) standing crops; (c) trees, if any; (d) other assets like wells (access to which may prove difficult as a result of the erection); and (e) any other damages/effects. Capturing all these, the IA will prepare a CPTD, including the compensation and payment schedule, which will be agreed with the Bank.

26. The project will follow the principle of avoidance, minimization, and mitigation in the construction of lines in agricultural fields having crops because of the inherent flexibility in phasing the construction activity and will try to defer construction in cropped areas to facilitate crop harvesting. However, if it is unavoidable and it is likely to affect the project schedule, compensation is given at the market rate for standing crops. In this regard, trees that are in the RoW, that is, all the trees that are within the clearance belt of the RoW on either side of the center line are identified and marked or numbered serially, from one affected person to the other, and documented. The type, girth (measured 1 m above ground level), and the approximate height are also noted for each tree. Trees belonging to the government, forest, highways, and other local bodies may be separately noted down for timely follow-up with the concerned authorities for inspection and removal. Cashew, guava, lemon, and other hybrid trees that typically do not grow tall are not marked for cutting since these trees can be crossed using standard tower extensions, if required.

27. A SA is conducted for each pole, documenting the persons likely to be affected and the nature and extent of impacts, and a mitigation plan is prepared in consultation with all the relevant stakeholders—affected persons, village councils, district councils' agriculture/horticulture officials, and the revenue authorities. Concurrence of the individual affected persons will be mandatorily obtained before submitting the plan to the district collector for approval. If concurrence is not forthcoming, alternate sites will be explored (as the poles are not site specific). In the case of community-owned agricultural/forest lands, the procedure described earlier will be followed. The SA concludes with (a) selection of an optimum line and (b) a social management plan, namely the CPTD. All these are disclosed widely among the stakeholders as well as on the Internet and evince feedback. Due approval will be sought from district/village councils.

Part C: Tribal People Development Planning Framework

28. The initial scoping and preliminary assessments made during the project preparation has established that there are tribal people (indigenous peoples) in the project area. It is also ascertained that they may have a collective attachment to the project area, particularly in the scheduled area and that they may get affected by the project interventions. Accordingly, it is required that a TPDP be prepared to ensure focused and exclusive attention toward tribal people. However, the project's investment programs (subprojects) will be unfolded over time. So, the exact geographical area of intervention as well as tribal people likely to be affected, too, will be known over time, as and when the subprojects are firmed up. Given this, a TPDPF is developed, which sets out an approach and methodology for the preparation of a TPDP. This section details aspects related to TPDPF.

TPDPF Objectives

29. The objectives of the TPDPF are to ensure that if indigenous peoples (referred to as tribal in India) are affected by a subproject, they

(a) are adequately and fully consulted;

(b) receive benefits and compensation equal to that of the mainstream population:

(c) are provided with special assistance according to laws and policies because of their vulnerabilities when compared to the mainstream population; and

(d) receive adequate protection against project adverse impacts on their culture identities.

Tribal People Development Planning Framework

30. The TPDPF seeks to ensure that tribal communities are informed, consulted, and mobilized to participate in the subproject preparation. The framework is intended to guide selection and preparation of additional subprojects under the project where impacts on tribal people are identified to ensure better distribution of the project benefits and promote development of the indigenous peoples in the project areas. The framework is prepared in accordance with both the Indian Constitution provisions as well as the Bank's procedures and serves the following purposes:

(a) Identification of the tribal people likely to be affected by the project interventions

(b) Assessment of the nature and extent of impacts likely to occur as a result of the project interventions

(c) Preparation of a plan (TPDP) outlining measures toward avoiding/minimizing the negative impacts as well as enhancing positive impacts

(d) Outline of an approach for conducting a SA to accomplish (a), (b), and (c), along with a framework for ensuring free, prior, and informed consultation with the affected tribal communities at each stage of project preparation and implementation

(e) Establishment of institutional and implementation arrangements as well as capacity-building measures for the implementation of the TPDP, associated disclosure mechanisms, and addressing any grievances

(f) Monitoring and reporting arrangements, including mechanisms and benchmarks appropriate to the project

TPDPF - Land Acquisition and Resettlement

31. In the present context, the framework assumes significance, especially in respect of two major interventions of the project—involuntary land acquisition and the CPTD.

32. A framework for securing lands through involuntary acquisition has been described earlier in Part A. Essentially, a detailed SIA shall be carried out to identify the households likely to be affected, assess the nature and extent of impacts likely to occur, draw a plan in consultation with all the stakeholders for acquiring land as well as an R&R action plan. An SIMP to this effect is developed. The strategy for ensuring broad community support based on free prior and informed consultation, gender mainstreaming, and social inclusion forms part of this social management framework for the project. The SIA and SIMP, however, have some special supplementary provisions in the case of 'tribal people', which fall under the realm of the TPDPF.

33. **Social Impact Assessment.** The first step involves the project IA (POWERGRID and respective state power utility and department) completing the technical investigation, including assessment of alternatives and detailed surveys, as well as identifying the lands for the purpose. The detailed report, along with land requirement, is submitted to the state government (resettlement commissioner) for further perusal. An SIA is initiated through an independent agency, with project-specific ToRs. The SIA agency shall first consult the concerned panchayat, municipality, and district/village council at the village level or ward level in the affected area, to carry out the SIA study. The study will assess the purpose of acquisition and estimate the affected families, including listing the poor and vulnerable sections (women, SC, ST) and carry out an analysis regarding the impact on community properties, assets, and infrastructure, particularly roads, public transport, drainage, sanitation, sources of drinking water, sources of water for cattle, community ponds grazing land, plantations, public utilities, electricity supply, and health care facilities. The end product of the SIA will be a SIMP, which would be an enmeshing of the RAP and the TPDP.

34. The SIA report and the SIMP shall be subject to public hearing in the affected area after giving adequate publicity for the venue, time, and so on, to ascertain the views of the affected families/communities and shall be included in the SIA. The final SIA report, including its translation in the local language, shall be published and made available to panchayats, district/village councils, and the deputy collector/district magistrate office, for wider circulation. The following additional provisions are required whenever the lands to be acquired are either in the scheduled areas or the land belongs to the STs:

(a) It is mandatory to obtain prior consent of the concerned Gram Sabha or the panchayats or the autonomous district councils at the appropriate level in scheduled areas in all cases of land acquisition in such areas.

(b) Provided the consent of the panchayats or the autonomous districts councils shall be obtained in cases where the Gram Sabha does not exist or has not been constituted.

(c) In the case of a project involving acquiring lands belonging to Scheduled Castes (SCs) or the ST families, a development plan shall be prepared, laying down the details of the procedure for settling land rights due, but not settled, and restoring titles of the STs (as well as the SCs on the alienated land by undertaking a special drive together with land acquisition). This plan is targeted at both SCs and STs, but, for the current project, it is referred to as the TPDP.

(d) The TPDP also contains a program for development of alternate fuel, fodder, and non timber forest produce resources on non forest lands within a period of five years sufficient to meet the requirements of the local communities.

(e) In the case of land being acquired from the members of the SC/STs, at least one-third of the compensation amount due shall be paid to the affected families initially as the first instalment and the rest shall be paid after taking possession of the land.

(f) The affected families of' the STs shall be resettled preferably in the same scheduled area in a compact block so that they can retain their ethnic, linguistic, and cultural identity.

(g) The resettlement areas predominantly inhabited by the SC/STs shall get land—to such extent as may be decided by the appropriate government—free of cost for community and social gatherings.

(h) Any alienation of tribal lands or lands belonging to members of the SCs in disregard of the laws and regulations in force for the time being shall be treated as null and void and in the case of acquisition of such lands, the rehabilitation and resettlement benefits shall be made available to the original tribal landowners or landowners belonging to the SCs.

(i) The affected STs, other traditional forest dwellers, and the SCs having fishing rights in a river, pond, or dam in the affected area shall be given fishing rights as appropriate.

(j) Where the affected families belonging to the SC/ST are relocated outside of the district, they shall be paid additional 25 percent R&R benefits to which they are entitled, in monetary terms, along with a one-time entitlement of INR 50,000.

(k) All benefits, including the reservation benefits available to the STs and the SCs in the affected areas, shall continue in the resettlement area.

(l) Whenever the affected families belonging to the STs who are residing in the scheduled areas referred to in the Fifth Schedule or the tribal areas referred to in the Sixth Schedule to the Constitution are relocated outside those areas, than, all the statutory safeguards. Entitlements and benefits being enjoyed by them under this act shall be extended to the area to which they are resettled regardless of whether the resettlement

area is a scheduled area referred to in the said Fifth Schedule or a tribal area referred to in the said Sixth Schedule or not.

(m) Where the community rights have been settled under the provisions of the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006. The same shall be quantified monetarily and paid to the individual who has been displaced.

35. In addition to the regular R&R package, tribal families will be entitled to the following benefits:

(a) One-time financial assistance of INR 50,000 per family

(b) Additional 25 percent R&R benefits for families settled outside the district

(c) Payment of one-third of the compensation amount at the very outset

(d) Preference in relocation and resettlement in area in the same compact block

(e) Free land for community and social gatherings

(f) A development plan to be prepared in the case of displacement

(g) Continuation of reservation and other Fifth Schedule and Sixth Schedule area benefits from displaced area to resettlement area

TPDPF - Compensatory Plan for Temporary Damages

36. T&D lines may have to be drawn through scheduled areas and/or tribal settlements outside the scheduled areas as well. It has already been stated that the land requirements for erecting tower/poles for transmission/distribution lines are just minimal. All that is required is land to place the tower footing, four of which warrants an area of 4 to 6 sq. ft. Lands in respect of the RoW are not acquired as agricultural activities can continue beneath the tower. Further, line alignments are done in such a way as to (normally) avoid settlements and/or structures. Because of the inherent flexibility in locating the poles, the project can easily avoid inhabited areas completely; hence, no relocation of population on account of TLs or distribution lines are envisaged. Thus, the actual impact is normally restricted to four legs of the tower. In case lands are to be acquired and people are to be displaced, then the framework presented in Part A (RPF) will be effected. On the other hand, if requirement is restricted to the four tower bases, then the framework presented in Part B (CPTD) will be effected. The project pays compensation to the affected persons/community for all damages, including cost of land below the tower, without acquiring the land. Thus, compensations are made in lieu of (a) land cost of tower footings; (b) standing crops; (c) trees, if any; (d) other assets like wells (access to which may prove difficult as a result of the erection); and (e) any other damages/effects. Detailed social assessment shall be undertaken as described in para 27 and the results of which will be reflected separately in the CPTD/ TPDP document.

Tribal People Participation Framework

37. The Bank's OP 4.10 on Indigenous Peoples too emphasizes 'a process of free, prior, and informed consultation' with the affected indigenous people's communities at each stage of the project, particularly during project preparation, to fully identify their views and ascertain their broad community support for the project. To ensure the peoples' participation in the planning phase and aiming at promotion of public understanding and fruitful solutions of developmental problems such as local needs of road users and problem and prospects of resettlement, various sections of PAPs and other stakeholders were and will be engaged in consultations throughout the project planning and implementation stages. In this project, however, it will go beyond consultations, as it is mandatory for the project to seek consent for all plans (SIMP and the CPTD) from the tribal councils.

38. Public participation, consultation, and information dissemination begins with initial phases of project preparation. Public consultation activities and information dissemination to PAPs and local authorities continues as the project preparation activities proceed in a project. Through the respective local governments and civil society, PAPs are regularly provided with information on the project and the resettlement process before and during the project preparation and implementation stages.

39. Information dissemination and consultations shall be a continuous process during preparation, implementation, and M&E. The information dissemination and consultation with PAPs shall include, but not be limited to, the following:

(a) Project description and its likely impacts

(b) Objective of the surveys

(c) Entitlement provisions for different impacts

(d) Mechanisms and procedures for public participation and consultation

(e) Resettlement options

(f) Grievance redress mechanisms and procedures

(g) Tentative implementation schedule

(h) Role and responsibilities of different actors

(i) Preferences for mode of compensation for affected fixed assets

(j) Household consultations for skill improvement training, use of compensation amount, and livelihood restoration

40. A detailed consultation and communication plan shall be developed for each subproject as part of the TPDP. This framework shall be a subset of the overall communication strategy of the project. Some of the methods that can be used for the purpose of communication will include

provisions of information boards, pamphlets distribution, wall paintings, drum beating, organizing meetings with key informants and village committees and opinion gathering through postcards, phones, and short messaging services.

Stakeholder Consultations and Disclosures

41. Stakeholder consultation has been taken up as an integral part of the project and viewed as a continuous two-way process, involving promotion of public understanding of the processes and mechanisms through which problems and needs are investigated and solved. Consultation helps obtain local and traditional knowledge that would be useful for decision making and provide an opportunity for the public to influence the project in a positive manner, thereby creating a sense of ownership and improve transparency and accountability in decision making.

42. The stakeholders for the project include those who are directly or indirectly related to the project and include the following:

(a) Ministry of DoNER, GoI

(b) State power utilities and departments in the participating six states—the AEGCL, APDCL, DPN, MSPCL, MePTCL, MePDCL, PEDM, TSECL

(c) State governments in participating states—Departments of Power/Energy, Finance, Tribal Welfare

(d) District collector

(e) District panchayat/Gram Samitis

(f) Village development boards

(g) Village councils

(h) Self-help groups/Community-based organizations/community development organizations

(i) Nongovernmental organizations in the project area

(j) PAPs

(k) POWERGRID

(l) Project management units at Guwahati and state capitals of the participating states

43. A variety of consultations has been held during the preparation itself. The draft ESPPF was made available on the respective states' (utility/department/state government) website for comment. These have been shared with all the key stakeholders through post/mail. Subsequently, the executive summary of the ESPPF has been translated into the local language and a workshop held in each state before finalization of the ESPPFs. In addition, the development of each

subproject will involve extensive consultations as a part of the subproject-specific assessment of environmental and social impacts.

Environmental Management

44. A large part of the NER is hilly and recognized as one of the globe's biodiversity hotspots. Forests cover over two-thirds of the total area of the states, exceeding the target of 60 percent for hilly areas. Even in plain areas of the states included in the project, the forest cover is in excess of 35 percent, surpassing the policy target of 33 percent set in the National Forest Policy. Construction of transmission infrastructure requires attention to the safety of workers and nearby communities, which has traditionally not been seen as a concern given the paucity of infrastructure, as well as low population density. It is further noted that electricity/power departments and/or utilities have limited capacity to manage the environmental impacts of operations such as handling chemicals such as transformer oils. In this context, the appropriate management of environmental aspects is recognized as a key aspect that needs attention from preparation through project implementation.

Environmental Conditions

45. **Forest cover.** All hill states have forest cover in excess of the target for hills (60 percent) and together, these 6 states account for about 11 percent of the total forest area of India. Assam, the one plain-dominated state too has forest cover in excess of the national target of 33 percent, as articulated in the National Forest Policy 1988. The highest proportion of the very dense forests is in Nagaland, while the largest area of this class is in Assam. Details are provided in Table 6.5.

Table 6.5. Forest Area in the States Covered in the Project

State	Forest Area (km^2)				Total Geographical Area (km^2)	Percentage of Forest Area in State
	Very Dense	Moderately Dense	Open	Total		
Assam	1,444	11,345	14,882	27,671	78,438	35.28
Manipur	728	6,094	10,168	16,990	22,327	76.10
Meghalaya	449	9,689	7,150	17,288	22,429	77.08
Mizoram	138	5,900	13,016	19,054	21,087	90.38
Nagaland	1,298	4,736	7,010	13,044	16,579	78.68
Tripura	109	4,641	3,116	7,866	10,491	74.98
Total	**4,166**	**42,405**	**55,342**	**1,01,913**	**1,71,351**	**59.48**

Source: State of Forest Report 2013.

46. **Protected areas.** These areas constitute between 1 percent (in Manipur) and just under 6 percent (in Mizoram) of total geographical area of the states. As can be seen in Table 6.6, with regard to proportion of forest area, the highest protection is provided by Assam (13 percent of its forest area), which has the lowest proportion of its geographical area under forests, and the lowest protection is in Nagaland, which has the highest proportion of very dense forests. By the number of areas, Manipur has the lowest number and Assam has the highest.

Table 6.6. Legally Protected Areas for Wildlife in States in the Project

State	National Park	Area (km^2)	Wildlife Sanctuary	Area (km^2)	Total Area (km^2)	Percentage of State Forest Area
Assam	5	1,977.79	18	1,840.14	3,817.93	13.80
Manipur	1	40.00	1	184.40	224.4	1.32
Meghalaya	2	267.48	3	34.20	301.68	1.75
Mizoram	2	150.00	11	1,090.75	1,240.75	6.51
Nagaland	1	202.02	3	20.34	222.36	1.70
Tripura	2	36.71	4	566.93	603.64	7.67

Source: http://wiienvis.nic.in/Database/wls_8230.aspx; http://wiienvis.nic.in/Database/npa_8231.aspx.

47. **Flora and fauna.** The NER has still been able to retain a significant proportion of its biodiversity, possibly due to long years of isolation and difficult terrain but is now increasingly endeavoring to unleash its resources for economic development. Any development process without considering the environmental features may cause irreversible damage to some of the most important ecological resources of the country. The region has at least 7,500 flowering plants, 700 orchids, 58 bamboos, 64 citrus, 28 conifers, 500 mosses, 700 ferns, and 728 lichen species. Some of the important gene pools of citrus, banana, and rice have been reported to originate from this region. About one-third of the flora of Northeast India is endemic to this region. Nearly 50 percent of the total flowering plants recorded from India hail from the NER. The region is equally rich in faunal diversity. An estimated 3,624 species of insects, 50 molluscs, 236 fishes, 64 amphibians, 137 reptiles, 541 birds, and 160 mammalian species have been so far described. In addition to resident species, there is also evidence of parts of the region being in the migratory path of some flagship species such as elephants.

48. **Fragility of landform.** The northeastern states are characterized by low hills, made up mostly of sedimentary material with shallow soils and fairly thick green cover. Removal of vegetation for creating infrastructure can expose the easily removable material to the elements. With its high rainfall, the erosion by water movement is common, with adverse impacts on the area, from where erosion takes place, with regard to stability and in the receiving areas where sediment load, can become significant.

49. **Water availability.** While there is high rainfall during the post-summer rainy season, water availability is not uniform. The region experiences very rapid movement of water during the rains, and some areas actually suffer drought conditions due to non-availability of water in peak summer. In the hilly terrain, in the absence of storage facilities, water that does not flow on the surface goes into the deeper aquifers, causing localized shortages in some areas.

50. **Chemicals management.** The management of chemicals across the various states' departments/utilities is quite patchy. Methods used do not always conform to industry practice. For instance, in a couple of states, unregulated reuse/recycling of transformer oil to lower capacity transformers (from those used in transmission to those in distribution) has been reported. Handling of SF_6, a potent GHG, appears to be ad hoc, with little systematic tracking of actual use or wastage.

Management of Environmental Issues

51. It should be noted that for transmission schemes, the final design is done after the contractor is mobilized and carries out the check survey for the lines involved using the angle tower location proposed as reference points. This necessarily means that the finalized impacts are known once the locations are frozen, as there is an inherent flexibility in locating these facilities.

52. **ESPPF formulation and use, including endorsement by state/utility.** Each state/utility has worked with POWERGRID to develop its own ESPPFs for implementation during the project life and during operations of the assets created under the project. Building on POWERGRID's ESPP, which was found to be acceptable for implementation under the use of country systems pilot program, each state worked with independent consultants who will not be part of the implementation, to develop an ESPPF specific to their own circumstances and needs. This was followed by consultations with a range of stakeholders following which these have been finalized and adopted by each state/utility as owners of the assets created under the project.

53. Key provisions of the ESPPFs include the requirement of assessment of environmental and social impacts for each subproject/scheme. In the case of locations being close to known ecologically sensitive receptors, whether legally protected areas or not, such as elephant corridors and important wetlands, separate biodiversity assessments are also required. Both these assessments form a part of the initial environmental examination report as described below. In addition, the ESPPF describes the approach to be adopted for analyzing alternative locations and alignments to follow the mitigation hierarchy. It also lays down measures to be implemented to manage common impacts during construction and operation phase. It describes the SIA process and provides the entitlements for potentially affected persons. Implementation arrangements and responsibilities for monitoring, reporting, and evaluation are also described so that ESPPF implementation can be effectively integrated with their business processes and institutional structure. This experience of implementing this project will act as a test for the wider use of the ESPPF in all T&D activities of the respective utility.

54. Where relevant, POWERGRID has tried to synergize with other known project interventions of the Bank. It has also agreed to implement the relevant recommendations of a Cumulative Impact Assessment being undertaken through the Second Mizoram State Roads Project, where the proposed alignment for the TL is quite close to one of the roads selected for improvement under that project. The consultant being hired by the Mizoram Public Works Department is mandated to cover the TL as part of their analysis. Detailed discussions have been held between the POWERGRID and officials of the state government to ensure that the synergy between the two projects can be gainfully utilized.

55. **IEAR preparation.** An IEAR will be undertaken for each investment proposal (subproject or scheme of the project). This IEAR will be supplemented with a specific and detailed biodiversity assessment whenever proposed location(s) are close to important ecologically sensitive areas, whether or not they are legally protected (wildlife sanctuaries and national parks), such as migration corridors. Each IEAR report also will include subproject/scheme related analysis of alternatives and details of consultations carried out, followed by management measures that will help reduce and mitigate unavoidable impacts. It will provide information regarding design measures to avoid some impacts, for instance, changes to alignment for avoiding some locations;

reduce others, for example, provision of bird silhouettes for reducing collisions where such locations are identified; or mitigate others such as provision of adequate drainage/bioengineering measures at substations. Some measures will be implemented by the contractor—safety during construction or bioengineering for substations, for instance, have been described and confirmed for inclusion in the contract documents. Responsibilities are assigned to various actors — contractors, supervising staff, and corporate units, for smooth implementation of these measures. An Environmental Management Plan that will be a part of the bidding/contract document is annexed to this summary. Budget provision for measures that require additional resources will also be included in the IEAR for each subproject/scheme. Since finalization of details of these measures will be confirmed by the contractor once the check survey has been completed and clearances are in place, such as under the Forest (Conservation) Act, 1980, an additional FEAR will be submitted for all Bank-supported subprojects (as briefly described at paragraph 58 below).

56. **Alternatives analysis.** The project has been designed to ensure improved electricity supply across six states in the NER of India. The no-project scenario is likely to exacerbate the relative exclusion of the citizens of this remote part from the mainstream. Reliable supply of usable electricity to far-flung villages would be hampered. It could result in increased pressure on the forests and wildlife as wood/charcoal would continue to be consumed for generating energy. Alternative renewable energy sources such as solar and wind may not be a good substitute to provide off-grid electricity due to the location and climate of the states. The installation of power lines and substations has the potential to adversely affect the environmental attributes as well as people on lands or close to whose lands these facilities are installed. However, the impacts are manageable due to the inherent relative flexibility that such systems have and the small footprint on the ground. For instance, the location of air-insulated substations of 220 kV, which can fit into about 10 acres, can be sited within an area of about 1 km^2 and the location of towers of up to 220 kV in a location has a normal footprint of 15x15 m land area. Three to four towers of 220 kV are required in every 1 km of line. For lines with voltage lower than 66 kV, H-poles or single poles are sufficient. Their footprint—individual locations may be less than 10 m^2—has even less impact and can be taken along existing road/path RoW. This flexibility allows decisions regarding the individual scheme/subproject to be made with robust consideration of environmental and social aspects over a large area compared to the footprint. The hierarchy of options starting with avoidance, minimization, reduction, and mitigation for reducing adverse impacts of each investment subproject/scheme on natural resources forms the bedrock of the state-specific ESPPFs, building on POWERGRID's experience of these instruments over a decade and more.

57. **Management of environmental impacts.** The key issues that would potentially be handled during a transmission subproject are summarized in Table 6.7:

Table 6.7. Impacts of Transmission Projects and their Management during the Project Cycle

S. No	Potential Issues	Management Measures
1.	Minimizing adverse impact on forests	To circumvent/lessen environmentally sensitive areas such as forest and other ecologically fragile/sensitive areas through optimization of route including use of modern tools such as GIS/ global positioning system and other modern techniques.
2.	Clearing/lopping of trees	Use of extended/special tower to reduce RoW and impact on trees

S. No	Potential Issues	Management Measures
3.	• Vegetation damage • Habitat Loss	To minimize damage to vegetation and habitat fragmentation, use of hand clearing and transportation of tower material by head loads into forest land and other land as well, wherever possible. Plantation as compensation is budgeted for with a ratio of two saplings for each tree that needs to be felled.
4.	• Habitat fragmentation • Edge effect on flora and fauna	Maintenance of only a 3 m wide strip for O&M and allows for regeneration of vegetation in the other one or two strips and beneath the TLs to avoid habitat fragmentation and edge effect. In hilly areas, this can possibly be totally avoided.
5.	Chances of accident involving elephant in the specified corridor due to placing of poles	Avoid such area to the extent possible. However, in case avoidance is not possible, suitable design modification in the pole such as provision of spike guards, barbed wire fencing, or any other arrangement shall be incorporated in such location.
6.	Erosion of soil and drainage along the cut and fill slopes in hilly areas	All cut-and-fill slopes in transmission/distribution lines are adequately protected using standard engineering practices, including bioengineering techniques wherever feasible. All drainage channels along or inside substations shall be trained and connected to main or existing drainage to avoid any erosion due to uncontrolled flow of water.
7.	Chemical contamination from chemical maintenance techniques	Do not allow use of chemicals for forest clearance/RoW maintenance.
8.	Polychloro biphenyls (PCBs) in electrical equipment	Use mineral oil in electrical equipment. Specification of oil containing PCB less 2 mg/kg (non detectable level) stated in the tender document.
9.	Induced secondary development during construction	Implementation periods are short-lived and do not induce secondary developments during construction
10.	Avian hazards from transmission/distribution lines and towers	Avian hazards mostly encountered in bird sanctuaries area and fly path of migratory bird predominantly related to nesting site. Although the incidence of avian hazards is rare due to the distance between the conductors. Further take all possible precaution to avoid these areas by careful route selection. However, bird guards are provided to prevent any avian hazards.
11.	Air craft hazards from TLs and towers	According to the requirement of IS 5613 of July 1994, provide aviation markers and night lights for easy identification of towers in notified/selected areas.
12.	Health and safety of worker/employee/community	During construction, the health and safety aspects of workers and nearby community shall be implemented through contractors with due diligence and compliance of required regulation/guideline through a safety plan. Use of best available technology for lines and do not cause any hazards to health and safety.
13.	Fire hazards	Fire hazards mostly occur in forest area. However, use of state of art automatic tripping mechanism for its transmission/distribution and substation disconnects the line in a fraction of seconds to prevent fire hazards. The Forest Department also takes precaution such as maintaining a fire line in the cleared forest area to avoid spread of fire.
		Firefighting instruments, including fire extinguishers, are kept in appropriate place for immediate action in the case of any fire hazard.
14.	Pollution	Although pollution is not an issue with transmission/distribution project's implementation, efforts are required to further minimize it. Sites are cleared of all the leftover materials and debris to avoid any chance of pollution.

S. No	Potential Issues	Management Measures
15.	GHG (SF_6 Gas)	Although leakage of SF_6 is not a major issue, make efforts to reduce the leakage through regular monitoring installing gas pressure monitor/leak detectors in circuit breakers.

58. **FEAR preparation.** To ensure that the measures identified in the IEAR are implemented, a FEAR will be prepared and shared with the Bank. The FEAR will provide details of clearances obtained, construction of additional features like water harvesting structures, or bioengineering measures, where applicable, and extent of compliance with construction stage Environmental Management Plan included in the contract documents. This will be done once the subproject has begun implementation and the necessary clearances are in place. Unless otherwise agreed with the Bank, POWERGRID will engage independent consultants with relevant qualifications and experience for preparation of the FEAR.

Implementation Arrangements for Environmental and Social Management

59. The project will be implemented through POWERGRID. After implementation is completed, the assets will be transferred to the states' utilities/departments for O&M. During implementation, teams from POWERGRID and the respective states will continue to work closely on the environmental and social aspects, as they have during preparation of the project and the development of the respective ESPPFs. This will ensure that the relevant staff in each state can take up the responsibility of implementation of their own ESPPF in future (phases or) projects.

(a) **Role of POWERGRID as the IA.** POWERGRID will ensure that its PIUs have adequate environmental and social expertise for each state, including field presence where appropriate. It will prepare the environmental and SAs for the subprojects/schemes in line with the ESPPF for the respective states. It will also ensure that the relevant provisions of the same are included in the design and bidding documents. It will supervise the implementation of the project, including the environmental and social management plans. It will facilitate the secondment of the representatives from each state/utility to the implementation unit for each state. It will provide them with on-the-job experience of implementing the provisions of the ESPPF over the life of the project and also cater to other specific training needs in line with the CBIS plan.

(b) **Role of each state/utility.** As the eventual owner of the assets created under the project, the state department/utilities are expected to establish the necessary arrangements for managing the environmental and social issues according to their ESPPF within the project life. It is expected that each state department and utility will identify the officials who will manage the environmental and social issues early, in advance of implementation of the project. They will send these staff/consultants responsible for handling the environmental and social issues on secondment/deputation to POWERGRID-led PIUs. They will also help facilitate the processes where the state government and/or utility have a role to play—for instance, in obtaining clearances.

(c) **Role of other GoI - Ministries and Agencies.** The MoP is the key ministry with administrative control over POWERGRID. It will be a part of the PSC and ensure that the relevant GoI-level coordination issues are resolved on time. The Ministry of Environment, Forests and Climate Change is responsible for providing clearances on environmental issues such as diversion of forest land, authorization for hazardous material and waste storage, and so on. It will have a regulatory role in granting the clearances for the subprojects/schemes.

(d) **Role of other agencies of respective state governments.** The state government agencies such as the Departments of Revenue and Land, as well as Forests, are key to timely implementation of the project. Their role as controlling departments will determine the speed and clarity the regulatory clearance process can have, especially since these departments are mandated to process the applications for diversion of land in each state. In addition, the Tribal Welfare Department will be very important for interaction regarding lands and rights of tribal people who are involved in project implementation. Pollution control boards will be involved in confirming that the chemicals management in the substations is in line with the relevant regulation pertaining to hazardous chemicals/waste handling, storage, and disposal.

(e) **Role of local institutions.** Local institutions play a vital role in ensuring that the project activities are undertaken with consideration of local people's aspirations. In the context of the tribal dominated societies in the NER, where land rights are also vested in these institutions in some cases, it is essential that they are fully aware and cooperative for smooth implementation of project activities. Since they are the first point of contact between project staff and local people, they should be made aware and should appreciate the nuances of the project affecting the local people/environment.

Budget

60. Based on POWERGRID's previous experience, the cost of implementing the ESPPF provisions varies from 5 to 10 percent of the project cost depending on the location of the project, the local laws, and so on. This includes measures that are implemented by external agencies like the state government (for compensation of land loss or diversion of forest land) and by contractors executing the works or nongovernmental organizations implementing the RAP. It is currently estimated that the ESPPF implementation costs will be around 8 percent of the project costs.