OPTIMIZING TENDERING PROCESSES AND TIMELINE FORECASTING FOR HIGH-VOLTAGE SUBSTATION AND TRANSMISSION LINE PROJECTS IN POWER GRID BANGLADESH PLC.

by:
Noor Jamal
23282019

A thesis submitted to the BRAC Institute of Governance and Development (BIGD) in partial fulfillment of the requirements for the degree of Masters in Procurement and Supply Management.

BRAC Institute of Governance and Development
BRAC University
November 2025

Declaration

It is hereby declared that

1. The thesis submitted is my own original work while completing degree at Brac University.
2. The thesis does not contain material previously published or written by a third party, except where this is appropriately cited through full and accurate referencing.
3. The thesis does not contain material which has been accepted, or submitted, for any other degree or diploma at a university or other institution.
4. I have acknowledged all main sources of help.

_____

Noor Jamal
Student ID: 23282019

Approval

The thesis titled

"Optimizing Tendering Processes and Timeline Forecasting for High-Voltage Substation and Transmission Line Projects in Power Grid Bangladesh"

submitted by Noor Jamal (ID: 23282019) has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Master of Procurement and Supply Management (MPSM) on 11, November 2025.

Examining Committee:

Supervisor: (Member)	_____ Mr. Rashed Morshed, FCIPS, PMP, PEng. Superintending Engineer (Procurement), BCPCL Supervisor, BRAC University
Program Coordinator: (Member)	_____ Mohammad Sirajul Islam Senior Academic Coordinator BIGD, BRAC University
External Expert Examiner: (Member)	_____
Departmental Head: (Chair)	_____ Dr. Imran Matin Executive Director BIGD, Brac University

Ethics Statement

The dissertation followed the ethical requirements of BRAC University. Each of the participants of the survey gave informed consent and were informed about the aims of the study. All personal identifiers and other sensitive information were stored in a highly confidential way and could be accessed only by academic purposes. All secondary sources have also been referenced in order to ensure academic integrity and avoid plagiarism.

Executive Summary

This has proven to be both necessary to the economic growth of the country since the expansion of the national electricity transmission system is reliable, but many projects by Power grid Bangladesh PLC have been faced with significant schedule overruns. This dissertation discusses the institutional and procedural causes of delays in tendering and timeline prediction. The research design used is a mixed-method design, which triangulates data relating to the stakeholder surveys and interviews of two detailed practical project case studies: (i) the IDB and ADB-funded Grid Network Development Project and (ii) the World Bank-funded ECGSTL Project, which are supported by the review of the international best practices. The results of the case studies show that unrealistic DPP schedules, price-oriented (L1) assessments that promote underbidding, limited design and purchase capacity, and external constraints (land/Right-of-Way, seasonal disruptions, manufacturing and shipping lead times and donor approvals) continue to lengthen the implementation schedule 20-200% of the initial schedule.

The study suggests a reform model including probabilistic scheduling (e.g., PERT and Monte Carlo simulations), a Most Economically Advantageous Tender (MEAT) model with weighted technical and financial requirements to evaluate competence and previous performance, organized capacity building, progress monitoring with the use of PMIS, milestone-based flow of funds, and active coordination of the stakeholders. All these are meant to change the administrative fixed planning to an analytical forecasted planning to align the practices of the Power Grid to the direction of the international development banks like ADB, World Bank, JICA, and KfW on value of money and implementation based on risks. The research adds a useful, locally customized template to enhance predictability and quality of the public power transmission projects in Bangladesh.

Dedication

This thesis is dedicated to my wife Shova Aktar Shelley, who has stood by me all through this study period and provided me with the motivation to continue with this project.

Acknowledgement

I am also thankful to the help of my supervisor whose knowledge and feedback have been of great help to this study. I also want to give thanks to the faculty of BRAC University and my fellow workers of Power Grid Bangladesh PLC. I would like to express my deep gratitude to all the participants who shared the information and views necessary to the current study.

Table of Contents

List of Tables

List of Figures

List of Acronyms and Abbreviations

Acronym	Full Form / Description
ADB	Asian Development Bank
AIIB	Asian Infrastructure Investment Bank
BCPCL	Bangladesh-China Power Company Limited
DPP	Development Project Proforma
ECGSTL	Enhancement of Capacity of Grid Substation and Transmission Lines
EPC	Engineering, Procurement, and Construction
ERD	Economic Relations Division
GIS	Gas-Insulated Substation
GoB	Government of Bangladesh
HV	High Voltage
IDB	Islamic Development Bank
ICB	International Competitive Bidding
JICA	Japan International Cooperation Agency
KfW	Kreditanstalt für Wiederaufbau (German Development Bank)
L1	Lowest Evaluated Bidder
MEAT	Most Economically Advantageous Tender
MPSM	Master of Procurement and Supply Management
MW	Megawatt
PERT	Program Evaluation and Review Technique
PGCB	Power Grid Company of Bangladesh (now Power Grid Bangladesh
PMIS	Project Management Information System
RoW	Right-of-Way
TL	Transmission Line
TOR	Terms of Reference
WB	World Bank

Chapter 1: Introduction

1.1 Background of the Study

The high rate of industrialization and economic development in Bangladesh has contributed immensely to the necessity to have a stable source of power. In order to satisfy this requirement, the task of constructing and maintaining the high voltage transmission system of the country was entrusted to Power grid Bangladesh PLC (previously Power grid Company of Bangladesh Ltd.). Such initiatives are very vital to strategy, technically difficult and require substantial amount of money. They include the renovation of old constructions and the development of new transmission lines and substations. The funds used in projects, which usually range between 10 million to 1.5 billion dollars are funded by bilateral partners such as KfW and IDB and international development agencies such as the world bank, ADB, JICA and AIIB.

TABLE 1: POWER GRID BANGLADESH PLC AT A GLANCE

Corporate Office	Power Grid Bhaban, Avenue-3, Jahurul Islam City, Aftabnagar, Badda, Dhaka-1212.
Year of Incorporation & Registration Number	1996 [C-31820(941)/96]
Status	Public Limited Company
Business	Transmission of Power
Authorized Capital in Taka	15,000 Crore
Paid up Capital in Taka as on 30.06.2025	11,060.32 Crore (Sum of Ordinary & Preference Share)
Transmission Line as on 30.06.2025	400 kV – 3,115 circuit km 230 kV – 4,752 circuit km 132 kV – 9,366 circuit km
Substations as on 30.06.2025	HVDC - One station (two block) 400/230 kV – 11 Nos. 400/132 kV – 04 Nos. 230/132 kV – 34 Nos. 230/33 kV- 06 Nos. 132/33 kV – 186 Nos.
Manpower as on 30.06.2025	3,871 persons.
Listed with DSE/CSE	09 October 2006

These projects must be completed in a short time to guarantee a consistent supply of electricity and meet the objectives of Power System Master Plan. Nonetheless,

majority of such projects are never completed at the right time, as scheduled. Statistics indicate that over 90 percent of the projects undertaken by Power grid require additional time to be completed and the real time taken to complete the project is usually 20 percent to 200 percent more than planned. Such delays have enormous financial, operational and social implications.

1.2 Problem Statement

The issue is that the timeframes, which are established in the process of procurement planning, particularly, in the process of the DPP and bidding, are impractical. The time estimates of projects are not always done with consideration of all the external and internal factors that may influence the project durations, including issues with land acquisition, design approvals, shortage of engineering personnel, extended lead time in manufacturing, shipping issues, and seasonal constraints. Moreover, the procurement process is very much focused on the lowest price and this may imply the contractors who lack the correct technical skills and financial stability. It is made difficult by longer tender reviews, many changes and checks by many ministers to complete contracts and commence projects.

Due to this, the variance of planned and actual timescales has been made a trend. Projects are characterized by extensions, new DPPs, and poor relations with development partners. This damages the procurement planning integrity and efficiency in the delivery of infrastructure in the public sector.

1.3 Research Objectives

This study aims to:

1. Conduct a critical analysis of the deficiencies in the existing tendering and timetable forecasting methods at Power Grid Bangladesh.
2. Look into the best ways to evaluate procurement and schedule projects around the world.
3. Make a plan for how to make reasonable, data-driven predictions about when projects will be done.
4. Suggest a contractor evaluation process that looks at more than just pricing, including technical, financial, and human resource capacity.

1.4 Research Questions

The dissertation is directed by the subsequent inquiries:

- What important things are Power Grid Bangladesh not taking into account when they try to predict how long a project will take?
- How does the current structure for evaluating bids cause delays in projects and poor execution by contractors?
- What worldwide approaches for buying things and managing projects can be used in Bangladesh?
- How can a new way of making predictions and evaluating projects lead to better results?

1.5 Significance of the Study

The paper has significance to policies and institutions. The findings will assist Power grid Bangladesh to make its procurement plans more effective, accelerate its projects, and utilize the donor funds more effectively. The study highlights institutional gaps in the development of DPP and the procurement process by the general population that requires urgent reforming by the policymakers. Besides, the dissertation adds value to the general academic and professional discourse on the topic of public procurement and can offer a template to be followed by other public infrastructure bodies in Bangladesh and other developing countries.

1.6 Scope and Limitations

The dissertation focuses on the high voltage substation and transmission line projects in Power grid Bangladesh, i.e. the projects which are funded by the international development partners. The review is limited to the tendering and time schedule prediction stages and omits the technical methods of construction. The availability of data may be restricted by the access to official project documentation and the willingness of the stakeholders to give honest opinions. In spite of these limitations, the research is aimed at providing comprehensive information based on the triangulation of primary and secondary data.

Chapter 2: Literature Review

2.1 Introduction

This literature review provides a theoretical and contextual framework of this dissertation. It strictly appraises the present research studies, policies and practices related to tendering procedures, methods of procurement evaluation and predicting schedules in infrastructure projects. The discussion is founded on the experiences of lessons gained in the global arena, theories of project management, and the procurement environment in Bangladesh. It concentrates on Power Grid Bangladesh (Power Grid) and the issues that it is facing in delivering high voltage substation and transmission line projects.

2.2 Public Procurement and Tendering: Theoretical Perspectives

2.2.1 Procurement Planning in Public Sector Organizations

Public procurement is the process by which government agencies purchase goods, works and services in order to deliver public services and construct infrastructure. According to Thai (2001), good procurement is striking a balance between efficiency, accountability, transparency, and most out of your money. The procurement planning is a highly critical step as it provides the basis of realistic budgets, deadlines, and scope. Ineffective planning often results in time wastage and cost increase.

The primary planning document of big projects in Bangladesh is the Development Project Proforma (DPP). The DPP establishes the estimated costs, finance arrangements and project timelines which will subsequently act as guides to the bidding process. However, some researchers (World Bank, 2019; ADB, 2020) have demonstrated that DPPs fail in most cases as they involve irrational assumptions.

2.2.2 Tendering Models

Tendering is the process of inviting, evaluating, and awarding contracts to suppliers or contractors. When bidding on big infrastructure projects around the world, there are usually three ways to do it:

- Open Competitive Bidding (OCB): This is a common way to make sure things are fair and open, but it might take a long time.

- International Competitive Bidding (ICB): Used when international funding or specialist knowledge is needed. This is how most Power Grid projects are done, according to the rules set by donors.

- Restricted/Selective Bidding: This is used when only a small number of eligible contractors are invited to bid.

In Bangladesh, the most widespread method of assessing contracts in the energy sector has been the Lowest Responsive Bidder (LRB) method. In this process the contractor who presents the lowest price but satisfies the lowest technical requirement is given the contracts. This can be cost effective, but it tends to overlook such key issues as financial stability, capabilities of the employees and competence to implement the project (Kwak and LaPlace, 2005).

2.2.3 **Weighted Evaluation Models**

Many donor financing agencies, like the World Bank, ADB and JICA are now advising Quality and Cost-Based Selection (QCBS) or weighted scoring models. Both financial and technical variables are assigned different weights in such models. In infrastructure procurement such as in the instance of technical competency, the technical competency may receive 70% of the points and financial cost may receive 30%. It is believed that these types of strategies are more effective in preventing the recruitment of low-cost yet technically inadequate contractors (OECD, 2016).

2.3 Timeline Forecasting and Project Management

2.3.1 **Project Scheduling Approaches**

A very important part of project management is being able to make reliable predictions about how long a project will take. Some classical tools are:

- Critical Path Method (CPM): Identifies the sequence of critical tasks that determine minimum completion time.
- Program Evaluation and Review Technique (PERT): Uses estimations of time that are based on chance, which is good for situations when things are not clear.
- Monte Carlo Simulation: Uses different scenarios to make predictions depending on risk.

According to Flyvbjerg, Holm, and Buhl (2002, p. 280), probabilistic forecasting rather than deterministic scheduling must be applied in infrastructure projects with a high number of stakeholders, complex regulatory processes, and external dependencies to reduce optimism bias and uncertainty.

2.3.2 **Factors Affecting Forecast Accuracy**

Empirical studies highlight several recurring factors behind inaccurate forecasting in developing countries:

- **Land acquisition and resettlement issues** (Flyvbjerg et al., 2003).

- **Delays in design approval** due to limited engineering capacity.
- **Manufacturing and shipment lead times** for imported equipment (ADB, 2018).
- **Political and institutional interference** in project timelines.
- **Inadequate risk management** during planning (UNESCAP, 2019).

These align closely with the challenges reported in Power Grid projects.

2.4 International Best Practices

2.4.1 Donor Guidelines

Multilateral development banks impose rigorous procurement frameworks to enhance efficiency:

- **World Bank Procurement Framework (2017):** Emphasizes value-for-money and life-cycle costing.
- **ADB Procurement Policy (2017):** Encourages fit-for-purpose approaches, risk-based planning, and capacity assessment.
- **JICA Guidelines (2020):** Stress quality assurance, realistic scheduling, and contractor competence.

In many cases, these guidelines require **no-objection approvals** from financing agencies at every critical stage. While ensuring transparency, this also lengthens the timeline, highlighting the need for realistic forecasting.

2.4.2 Global Experiences in Infrastructure Procurement

Countries such as India, Vietnam and Kenya show that when weighted evaluation criteria are adopted coupled with early involvement of contractors, the delays in projects have been minimized. An illustration is the Power Grid Corporation (PGCIL) in India, which implemented weighted scoring in EPC tenders based on financial capacity, human resource and track record in executing projects, which enhanced performance in terms of time completion (CIGRE, 2018).

2.5 Bangladesh-Specific Challenges in Tendering and Forecasting

2.5.1 Institutional Weaknesses

Power Grid Bangladesh faces unique institutional constraints:

- **Shortage of skilled procurement professionals**: Engineers often lack specialized training in donor-funded procurement guidelines.
- **Multi-layered approval process**: Contract vetting requires clearance from NBR, Ministry of Law, and Ministry of Commerce, leading to long delays.
- **Audit and compliance concerns** discourage engineers from proactive decision-making.

2.5.2 Local Stakeholder Issues

The landowner resistance is particularly susceptible in transmission line projects, particularly where the population is dense or in urban regions. Pay systems are usually seen as being poor and result in delays during handover of the site.

2.5.3 Contractor Behavior

International contractors often use local agents, who in some cases promote unrealistically low bidding policy. This introduces the threats of poor performance, replacement of materials and numerous amendment requests. These practices lead to controversies, time-consuming appraisal and general project delay.

2.6 Gaps in the Literature

Although the importance of weighted assessment and risk-based prediction has been stated in international literature, the scholarly literature on the applicability of the two practices to the procurement environment in Bangladesh is low. The existing literature on the subject pays little attention to a systematic examination of the pattern of a discrepancy between predicted and actual schedules in Power Grid projects. This dissertation aims to fill that gap by integrating the best practices around the world and local case studies and suggest a customized framework to Power grid.

2.7 Conclusion

The literature highlights that infrastructure project procurement and time forecasting entails sound planning, capacity building and multidimensional assessment models. The over dependence of lowest-price tendering and deterministic forecasting has always resulted in delays and inefficiencies. Through the experience of other countries and taking into account the unique institutional and social issues in Bangladesh, it is possible to create a more optimized procurement and forecasting model of the Power Grid Bangladesh. The chapter establishes a theoretical basis of the case study and data analysis to be discussed in Chapters 4 and 5.

Chapter 3: Research Methodology

3.1 Introduction

This chapter details the research design, methodology framework, data collection procedures, and analytical procedures that will be used in this dissertation. The paper uses a mixed-method approach to examine the weaknesses of tendering procedures and schedule prediction within Power grid Bangladesh (Power grid). It integrates both qualitative and quantitative methods in order to give a holistic picture of the systemic problems causing delays and inefficiencies in the projects.

3.2 Research Design

The study will be conducted as an exploratory case study with the assistance of primary and secondary data. The design is suitable because tendering processes are complex, and they involve many institutional actors. The case study methodology will enable examining the particular projects by Power Grid in detail, whereas the mixed-methods approach will be used to assure triangulation of the data regarding the perceptions of the stakeholders, documentary evidence, and comparative literature.

The research design follows three interlinked components:

1. **Literature Review (secondary data):** To identify theoretical frameworks, international best practices, and known challenges in procurement and forecasting.
2. **Case Studies (secondary & primary data):** To analyze selected delayed projects in Power Grid and assess root causes of timeline slippages.
3. **Stakeholder Survey and Interviews (primary data):** To collect insights from key stakeholders directly involved in procurement, tender evaluation, and project implementation.

3.3 Research Philosophy and Approach

The paper is based on pragmatism, which is practical solutions to the practical procurement problems. It is an integration of both inductive (drawing of insights based on empirical case-studies, based on stakeholder experience) and deductive reasoning (testing of concepts and frameworks based on international best practices versus the Power Grid context).

3.4 Research Strategy

The case study approach is taken, and two to three typical high voltage substation and transmission line projects are targeted. The cases are empirical data of the delays associated with procurements and are reviewed against the larger institutional practices.

The analysis of the case study is supplemented by a survey and semi-structured interviews with the stakeholders so that the outcomes are not restricted to the review of the documentary, but the point of view of practitioners is taken into consideration.

3.5 Data Collection Methods

3.5.1 Primary Data

Primary data will be collected through the following methods:

1. **Questionnaires:**
    - Mailed to procurement professionals, project directors, engineers, representatives of consultants and contractors working on Power Grid projects.
    - The questionnaire will have both closed-ended (Likert scale, ranking) and open-ended questions to reflect the perceptions of tendering efficiency, accuracy of forecasting and institutional bottlenecks (see Appendix draft questionnaire).
2. **Semi-structured Interviews:**
    - Carried out on a smaller group of the major stakeholders (procurement officers, senior management, contractor representatives).
    - Interviews will give more information about systemic issues like ministry approvals, DPP preparation and contractor performance.
3. **Expert Consultation:**
    - The proposed forecasting and contractor assessment framework will be validated by consulting with the seasoned procurement experts and scholars.

3.5.2 Secondary Data

Secondary data sources include:

- Official Project Documents: Development Project Proformas (DPPs), tender documents, evaluation reports and Project Completion Reports (PCRs).
- Organization Records: Purchasing rules of Power grid, yearly reports, and audit results.
- Donor Agency Guidelines: Procurement structures of ADB, World Bank, JICA, AIIB, and IDB.
- Published Literature: Procurement and project management books, journal articles and policy reports.

3.6 Sampling Strategy

3.6.1 Case Study Selection

Cases are selected using **purposive sampling**, focusing on projects that:

- Are high-value (USD 50 million+).
- Have experienced significant delays.
- Represent both substation and transmission line construction.

Illustrative examples include:

- *Power Grid Expansion Project (IDB & ADB-funded)* — Substations and transmission lines.
- *ECGSTL Project (World Bank-funded)* -- Substations and transmission lines.

3.6.2 Respondent Selection

- **Population:** Power Grid staff, project directors, consultants, and EPC contractors.
- **Sample size:** 23 questionnaire respondents, plus 6–8 semi-structured interviews.
- **Sampling technique:** Purposive and snowball sampling, targeting individuals directly involved in procurement and project execution.

3.7 Data Analysis

3.7.1 Qualitative Analysis

- **Thematic analysis** of interview transcripts and open-ended responses.

- Identification of recurring themes such as unrealistic scheduling, bureaucratic delays, contractor underperformance, and donor requirements.
- Comparison with international best practices to highlight gaps.

3.7.2 Quantitative Analysis

- **Descriptive statistics** (frequencies, percentages) for questionnaire responses.
- **Trend analysis** of project delays, comparing planned vs. actual timelines.
- Where applicable, basic statistical tools (e.g., mean rankings) will be used to prioritize perceived causes of delay.

3.7.3 Triangulation

Data from multiple sources (case studies, surveys, and literature) will be triangulated to ensure reliability and validity of findings.

3.8 Reliability and Validity

To enhance reliability:

- All the respondents will be administered to using standardized questionnaires.
- Several case studies will be used to give comparative evidence.
- This will include data triangulation between primary and secondary sources.
- The proposed forecasting and evaluation framework will be validated through expert consultation.

3.9 Ethical Considerations

Participation in the study will be done voluntarily and informed consent will be taken on all respondents.

- All interviewees and survey participants will have their anonymity and confidentiality. The data in the organization will be utilized in a purely academic manner.
- The research will follow the academic integrity and ethical research standards of BRAC University.

3.10 Limitations of Methodology

- Confidential project documents can be limited.

- Respondent sensitivities- The respondents might not be ready to give candid opinions because of political or organizational sensitivities.
- The sample size might not be able to represent all the perspectives, though the effect should be countered using triangulation.

3.11 Conclusion

The chapter has identified the research design, research methodology and methods of data collection to be used in the dissertation. The study uses the combination of case study analysis, stakeholder surveys and expert interviews to take a holistic approach to understand the procurement inefficiency and unrealistic time schedule forecasts in Power grid Bangladesh. The following chapter shall provide the empirical case studies of some of the selected projects to base the research on empirical evidence.

Chapter 4: Case Study – Power Grid Bangladesh

4.1 Introduction

This chapter provides case studies of large infrastructure projects (high voltages) being developed by Power grid Bangladesh (Power grid), the tendering processes, time prediction, and the final results. The analysis illuminates the difference between the planned and actual implementation periods, systemic weaknesses of procurement planning and demonstrates institutional and external challenges. Two projects are discussed in detail, including (1) 400/230/132 kV Grid Network Development Project (IDB-sponsored and ADB-sponsored), and (2) Enhancement of capacity of Grid Substation and Transmission Lines for Rural Electrification (World-sponsored). These cases give empirical data on the repetitive problems in the forecasting and tendering practices.

4.2 Power Grid Procurement Environment

Power grid adopts high value infrastructure projects that are subject to public procurement regulations and which are also in tandem with the procurement policy of the international development partners like ADB, World Bank, JICA and IDB. The tendering is usually done based on international competitive bidding (ICB) under turnkey basis (design, supply, installation, testing, and commissioning).

Even when the procedures in the procurement are followed by the letter, when it comes to the implementation of large-scale projects, it is often characterized by serious delays. The Development Project Proposal (DPP) in most instances places impractical completion schedules that fail to properly capture ground realities like land acquisition and design approval bottlenecks, scarcity of engineering manpower and an extended manufacturing and shipping lead time. These aspects lead to extension over and over, DPP revisions and poor relations with financing agencies.

4.3 Case Study 1: 400/230/132 kV Grid Network Development Project [Power Grid Expansion Project by IDB & ADB]

4.3.1 Project Overview

- **Financier:** Islamic Development Bank (IDB) & Asian Development Bank (ADB)
- **Objective:**
    - To drain off the power of the future power plants in Ghorasal.
    - Up gradation of 230KV transmission network at North-Eastern part of Dhaka.

- To fulfill the rising needs of larger Dhaka, Chittagong and Sylhet regions.
- Up gradation of 132KV sub-stations 3 nos. at Comilla (South), Modunaghat (Chittagong) and Manikganj.

4.3.2 Procurement package/Component wise brief description:

❖ **Package-1, Lot-1 (Substations): Design, Supply, Erection, Testing & Commissioning of 230KV and 132KV Substations on turnkey basis**

Key Information:

1. **Scope: Total Substation: 15 nos.**
   - New 230/132kV substation: 04 nos.
   - New 132/33kV substation: 05 nos.
   - Substation upgradation: 02 nos. and
   - Bay Extensions: 04nos.
2. **Name** of the Turnkey contractor: Consortium of Siemens Ltd. and RPP Infra Projects Ltd., India
3. **Date** of the contract: October 24, 2017
4. **Contractual** completion period: 900 days from the effective date of the contract
5. **Date** of actual completion: Ongoing
6. **Contract** value: USD 67,166,429.92 plus BDT 1,969,458,613.31

❖ **Package-1, Lot-2 (Transmission Lines): Design, Supply, Erection, Testing and Commissioning of 400kV, 230kV and 132kV Transmission Lines on Turnkey Basis.**

Key Information:

1. Scope: Total Transmission lines: 148.14 km.
   - 400kV Transmission Lines: 28 km.
   - 230kV Transmission Lines: 38.07 km. and
   - 132kV Transmission Lines: 82.07 km.

2. Name of the Turnkey contractor: LS, SEAN and APS Consortium

3. Date of the contract: October 24, 2017

4. Contractual completion period: 900 days from the effective date of the contract

5. Date of actual completion: Ongoing

6. Contract value: USD 42,197,788.97 plus BDT 1,358,383,109.60 (Original)
USD 36,193,268.49 plus BDT 1,086,597,609.41 (Revised)

❖ **Package-2: Construction and Completion of 132/33kV GIS Substation at Dhamrai, 230/132kV GIS Substation at Shyampur and associated Transmission Lines on Turnkey Basis.**

Key Information:

1. **Scope:**
   - New 230/132kV Substation: 01 no.
   - New 132/33kV Substation: 01 no.
   - 230kV LILO: 0.7 km
   - 132kV LILO: 0.5 km.
2. **Name** of the Turnkey contractor: Siemens Consortium Dhamrai-Shyampur Project
3. **Date** of the contract: October 19, 2015
4. **Contractual** completion period: 730 days from the effective date of the contract
5. **Date** of actual completion: May 31, 2019
6. **Contract** value: USD 17,619,415.88 plus BDT 489,663,790.26 (Original)
   USD 17,818,394.06 plus BDT 491,726,620.97 (Revised)

❖ **Package-3, Lot-1 (Substations): Construction and Completion of 132/33 kV AIS Substation at Kachua, 132/33 kV GIS Substation at Kalurghat and Upgradation of existing Madunaghat & Comilla(S) AIS Substation to GIS Substation on Turnkey Basis.**

Key Information:

1. **Scope:**
   - New 132/33kV Substation: 02 nos.
   - 132/33kV Substation upgradation (from AIS to GIS): 02 nos.
2. **Name** of the Turnkey contractor: M/s. Hitachi Energy India Ltd. (formerly known as ABB India Ltd.)
3. **Date** of the contract: June 07, 2017
4. **Contractual** completion period: 730 days from the effective date of the contract
5. **Date** of actual completion: April 19, 2022.
7. **Contract** value: USD 20,552,352.96 plus BDT 380,268,349.99 (Original)
   USD 22,484,274.13 plus BDT 381,506,139.99 (Revised)

❖ **Package-3, Lot-2 (Transmission Lines): Design, Supply, Erection, Testing & commissioning of Madunaghat- Kalurghat 132kV Double Circuit Underground Transmission Line and Re-conductoring of Existing Comilla(S)-Chandpur 132kVDouble Circuit Overhead Transmission Line on Turnkey Basis.**

Key Information:

1. Scope: Total Transmission lines: 72 km.

- New 132kV Underground Line: 07 km.
- Re-conductoring of existing 132kV Transmission Line: 65 km.

2. Name of the Turnkey contractor: M/S. CCCE-ETERN-HANBAEK Consortium

3. Date of the contract: April 09, 2017

4. Contractual completion period: 540 days from the effective date of the contract

5. Date of actual completion: April 09, 2022.

6. Contract value: USD 8,559,844.06 plus BDT 26,938,127.90 (Original)
USD 12,302,867.72 plus BDT 29,881,932.18 (Revised)

- **Scope:**

a) 400 KV Ghorashal-Tongi Double Circuit transmission line: 28 km
b) 230 kV transmission line: 55.3 km (U/G:4.3km)
c) 132 kV transmission line: 173km
d) 230/132/33 kV substation:02 Nos, (2x300 MVA each)
e) 230/132 kV substation:02 Nos, (2x300 MVA each)
f) 230/132 kV switching station: 01 Nos
g) 132/33 kV S/S all over the country: 09 Nos (Total 1702MVA)
h) Bay extension 230kV: 6 Nos.,
i) Bay extension 132 kV: 4 Nos
j) 132/33 kV Substation up gradation: 03 Nos (Total 300MVA)

4.3.3 DPP Implementation Period

TABLE 2: DPP REVISION 400/230/132KV GND PROJECT; CASE STUDY-1

	Date of Commencement	Date of Completion
Original DPP	July' 2013	June' 2017
No Cost DPP Time Extension (1st)	July' 2013	June' 2019
1st Revision of DPP	July' 2013	June' 2021
No Cost DPP Time Extension (2nd)	July' 2013	December' 2022
2nd Revision of DPP	July' 2013	December' 2024
No Cost DPP Time Extension (3rd)	July' 2013	December' 2025

4.3.4 Planned Timeline vs. Actual Progress

The contract was operationalized in early 2017, and it should be finished by the end of 2019. Nevertheless, a few years later the substations and the transmission lines were not complete. The project needed at least three extensions of DPP and financing agencies urged Power grid to disburse loans to it despite unfinished works.

4.3.5 Causes of Delay

The causes of significant delays were a series of factors that were interdependent:

- Weak Financial Capacity of the Contractor: There were some members of the consortium who were not financially sound and this led to cash flow issues during the implementation.
- Unrealistic Pricing Strategy: The contractors had placed relatively low bids, which initially looked competitive but was not possible to implement.
- Changing Project Directors: Power Grid had no less than six project directors that retired, were promoted, or transferred. This interfered with continuity and decision making.
- Land and Site Matters: There were delays in acquiring sites or the need to upgrade the current equipment. Timelines were also extended due to shutdown requirements to ensure constant power supply.
- Scope changes: Scope change in various site as a result of RoW problems and stakeholder demand became delayed in implementation period.
- underestimation during Planning Stage: The contractors and Power grid did not take these complexities into due consideration in the initial forecast of the time schedule.

4.3.6 Lessons Learned

- Contractors must have more weight in the evaluation on both financial and technical capability and not just price.
- Continuity in project management is a must; more change of leadership will derail.
- More realistic forecasting is supposed to take into account site preparedness, timetable of shutdowns, scope of works and financing risks.

4.4 Case Study 2: Enhancement of capacity of Grid Substation and Transmission Lines for Rural Electrification.

4.4.1 Project Overview

- **Financier:** World Bank (WB)
- **Objective:**

  - To provide quality power supply in the rural setting at economical grid concept.
  - To satisfy the increased demands of larger Dhaka rural region, North west of the countries.

4.4.2 Procurement package/Component wise brief description:

❖ **Package-1: Design, Supply and Installation of 132kV & 230kV Transmission Lines:**

Key Information:

1. **Scope:**
   - New 230/132kV Line & LILO Line : 108.459 km.
   - Total Tower: 371 nos.
   - Existing 132kV Double Ckt. line Reconductoring: 226.994 km.
   - Existing 132kV Single Ckt. line Stringing: 49.409km.
   - Existing 132kV Transmission Line OPGW Stringing:101.706 km.
2. **Name** of the Turnkey contractor: HG Power Transmission Sdn.Bhd. Malaysia
3. **Date** of the contract: 7th Aug, 2016
4. **Contractual** completion period: 24 months from the effective date of the contract
5. **Date** of actual completion: 31th January 2021
6. **Contract** value: USD 20,705,890.32+ BDT 888,529,687.02 (Original)
   USD 21,738,115.32+ BDT97,4719,740.74 (Revised)

❖ **Package-2:** Design, supply, installation, testing and commissioning of 132/33kV substations at Sherpur (Bogra) & Kurigram, capacity upgradation of existing 132kV substations at Thakurgaon, Palashbari, Shirajganj, Natore and Chapainawabganj and 132kV bay extension at Rangpur substation**:**

Key Information:

1. **Scope:**
   - Construction of : 2 nos. New (Kurigram & Sherpur-Bogra) 132/33 kV AIS substation with 2 x 50/75 MVA transformer each including 33 kV

Switching Station with 14 nos (6 nos. for Kurigram & 8 nos. for Sherpur-Bogra) complete 33 kV bays for BREB Polli Bidduit Somity (PBS)'s.

- Capacity Upgradation 5 nos. existing S/S's :2x 50/75 MVA each (at Thakurgaon, Palashbari, Sirajganj, Natore & Chapainawabganj Grid S/S)
- 132 kV Bay Extension: 1 no. (at Rangpur S/S)

2. **Name** of the Turnkey contractor: M/S. Consortium of Energypac- Daewoo (Bangladesh & Korea)
3. **Date** of the contract: July 28, 2016
4. **Contractual** completion period: 24 months from the effective date of the contract
5. **Date** of actual completion: 31.12.2020
6. **Contract** value: USD 12267145+ EURO 1308059+ BDT 336492542

❖ **Package-3: Design, supply, installation, testing and commissioning of 230/132/33kV GIS substation at Keraniganj:**

Key Information:

1. **Scope:**
   - Construction of 230/132/33 kV GIS substation at Keraniganj with 230/132 kV, 3×225/300 MVA transformer and 132/33 kV, 2×50/75 MVA transformer including 33 kV Switching Station with 8 nos. complete 33 kV bays for BREB Polli Bidduit Somity (PBS)'s.
2. **Name** of the Turnkey contractor: M/S. Consortium of Siemens Ltd. & Siemens Bangladesh Ltd.
3. **Date** of the contract: May 16, 2016
4. **Contractual** completion period: 24 months from the effective date of the contract
5. **Date** of actual completion: 31.03.2021
6. **Contract** value: USD 16296859.39+ BDT 413284912.82
   USD 16,778,807.40+ BDT 512,263,833.00 (revised)

❖ **Package-4: Design Supply, installation, testing and commissioning of 132kV Substation at Nawabganj, Sreenagar, Narail, Jhenadaha and Magura:**

Key Information:

1. **Scope:**
   - Construction of 3 nos. (at Nawabganj, Narail & Sreenagar) 132/33 kV AIS substation with 2×50/75 MVA transformer each including 33 kV Switching Station with 28 nos.(10 nos. for Nawabganj, 8 nos. for Narail & 10 nos. for Sreenagar) complete 33 kV bays for BREB Polli Bidduit Somity (PBS)'s.
   - 132 Kv Bay Extension 4 nos. (Magura-3 nos. & Jhenaidaha-1 no.)

2. **Name** of the Turnkey contractor: M/S. Consortium of Energypac- Daewoo (Bangladesh & Korea)
3. **Date** of the contract: 09th May, 2016
4. **Contractual** completion period: 24 months from the effective date of the contract
5. **Date** of actual completion: 31.12.2020
6. **Contract** value: USD 11031748.35+ BDT 437007348.38

4.4.3 DPP Implementation Period

TABLE 3: DPP REVISION ECGSTL PROJECT; CASE STUDY-2

	Date of Commencement	Date of Completion
Original DPP	July' 2014	December' 2017
No Cost DPP Time Extension (1st)	July' 2014	December' 2018
1st Revision of DPP	July' 2014	December' 2019
Extension of DPP due to Covid-19	July' 2014	December'2020
Final Time Extension of DPP	July' 2014	June'2021

4.4.4 Planned Timeline vs. Actual Progress

The project was projected to be finished towards the end of 2017 but went to June 2021. Even though the project was finally delivered and commissioned, it was about 100 percent behind the schedule. All the four packages are over but each package contract signing was regarded as an independent contract.

4.4.5 Causes of Delay

1. Land Development in Rainy Season: The contract was signed in the season of monsoon when land development activities were not easily achieved. More than two months were lost in soil compaction and site preparation.

2. Right of Way (RoW) problems and local/ political influence: All transmission line is subjected to obstacle and challenges when finalizing the line route due to old electricity act 1910. Tower footing foundation was not compensated through land except in the damages of crops. Resistance to construct the line specially in the Keraniganj area is also created by Inland water and transport authority (BIWTA), even in some cases, where there are few government agencies. Certain construction works in substation sites were also stalled because of the influence of local politicians who wanted to be involved in the construction activities or to provide construction materials.

3. Long Manufacturing Lead Times: There was a need to manufacture some equipment in Europe and the lead time was approximately 10 months after approval of design. The situation was further worsened by delays in shipment.
4. Design and Approval Delays: The design approval had to be closely synchronized with a limited number of design engineers of Power grid who were already overworked with several other projects.
5. Availability of Foreign Engineers: There were various phases of construction and testing that needed the engineers of the manufacturer. Their arrival was delayed due to visa issues and time schedule.
6. Compact Site Challenges: The integration of several systems (230 kV, 132 kV, 33 kV) on less than 3 acres necessitated a very accurate engineering process, as well as more time in Keraniganj Substation. There were also many challenges in other places such as to get shutdown to augment existing substation feeder was not easy.

4.4.6 Lessons Learned

- The forecasting should take into account seasonal factors (rainy season).
- DPP planning should take into consideration manufacturing and shipment lead times that are realistic.
- Liaising with foreign engineers: This must be planned early so that there are no delays in visa and schedule.
- Consultation with stakeholders and project benefit awareness in regard to national economy shall be put in place and time span shall be added.

4.5 Cross-Case Analysis

The two projects indicate systemic flaws in the tendering and forecasting procedures of Power Grid:

1) Impractical DPP Timelines: The scheduled implementation time was highly underestimated against the real time requirements.
2) Excessive Focus on Lowest Price: Contractors offered low bids in order to win contracts and were not able to fulfill their promises, which shows the inefficacy of lowest-price assessment.

3) Institutional Bottlenecks: The bottlenecks were occasioned by frequent change of leaders, multi-ministerial approvals and lack of capacity to design engineering.
4) External and Local Constraints: Land acquisition was not taken into consideration, seasonal weather, delays in shipping and resistance of stakeholders were not taken into consideration in forecasts.
5) Donor Pressure: Development partners demand that they are completed at the right time depending on the timelines of loan payments, which puts more pressure when their forecasts are not realistic.

4.6 Conclusion

The IDB-sponsored Power grid expansion project and the World Bank-sponsored ECGSTL Project case studies point out the common discrepancy between scheduled and actual schedules in the projects of Power grid. The two instances demonstrate that forecasting and tendering processes do not consider such realities as the capacity of the contractor, land and site challenges, seasonal effects and delays in international supply chains.

The lessons learnt underline the necessity of a more risk-driven approach to timeline forecasting and a multidimensional system of contractor evaluation that goes beyond the lowest-price principle. The following insights are the basis of the analysis and recommendations in the following chapter.

Chapter 5: Data Analysis and Discussion

5.1 Introduction

This chapter shows the data analysis of the data gathered using the case studies, questionnaires with the stakeholder interviews. The findings have been discussed against the research objectives and questions stated in Chapter 1. The analysis is aimed at determining underlying causes of the tendering inefficiencies and delays in the timeline of the Power Grid Bangladesh (Power Grid) and the review of the current practices as per the international best practices. Cross-case evidence and survey responses are also incorporated in the discussion to help to give a picture of the challenges in institutions and operations in a holistic manner.

5.2 Questionnaire and Interview Findings

5.2.1 Respondent Profile

The survey was conducted among 37 respondents that were procurement officers, engineers, project directors, consultants and contractors. They had experience of less than 5 years up to more than 15 years in high voltage substation projects and transmission line projects.

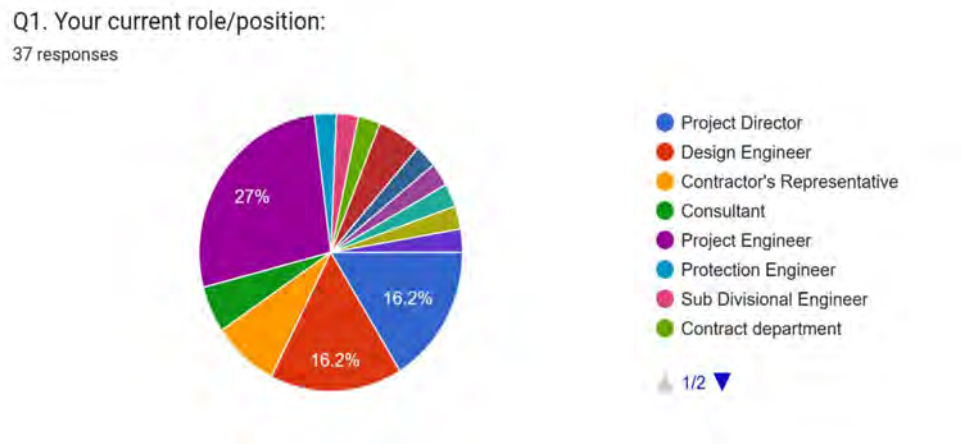


FIGURE 1: ROLE/POSITION OF RESPONDENT

The respondents were representative of stakeholders involved in the project implementation as almost 78.4% had a direct experience in tendering and procurement planning.

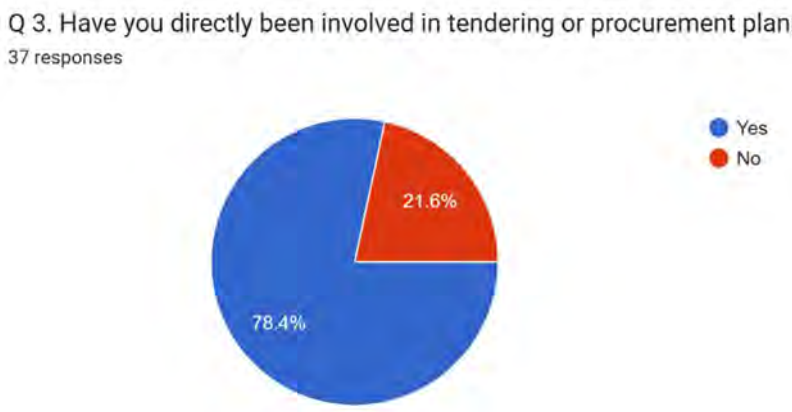


FIGURE 2: INVOLVEMENT IN TENDERING PROCESS

5.2.2 Perceptions of Timeline Forecasting

An analysis of the results of the survey questions 4, 5, and 6, as a whole, suggests that the respondents in Power Grid Bangladesh (Power Grid) consider the timeline forecasting processes currently to be highly unrealistic and not data-driven enough. In response to the question on whether development project proposals (DPPs) are real or unrealistic, most of them (51.4) were somewhat unrealistic with only 10.8% being very realistic. This indicates that there is a general trend of optimistic scheduling that the duration of the project is usually shortened to suit administrative or political requirements instead of actual ground realities. Some of the respondents indicated that the discrepancy between intended and actual schedules causes frequent DPP extensions and rescheduling in the implementation process.

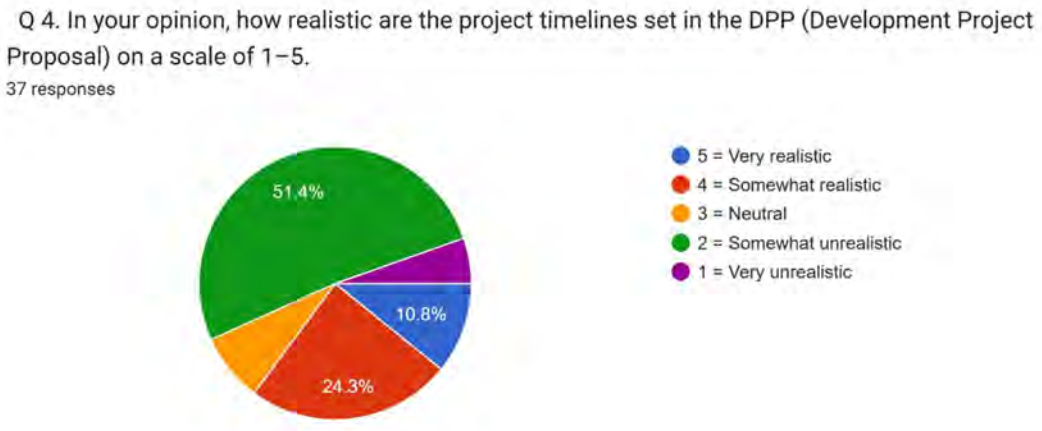


FIGURE 3: PROJECT TIME LINE REALISTIC SURVEY

When determining the factors that are most frequently neglected in time line forecasting, the data show clearly that land acquisition and resettlement is the most important problem with 86.5% of respondents choosing the same. This is consistent with institutional hurdles of the past in obtaining Right-of-Way (RoW) and settling compensation claims against the local communities- both of which are infamously hard to forecast when the project is being planned early in its development. Also 67.6% chose seasonal and weather-related interruptions as these were considered practical since it was difficult to sustain consistent progress at the monsoon season or flood prone areas. The other aspects that were frequently disregarded included manufacturing lead times (51.4%), stakeholder and political pressure (45.9%), shipment delays (40.5%), and design or drawing approvals (27) which are all factors that lead to slippages in the project. The less percentage (8.1) cited lack of skilled manpower in Power Grid implying that lack of human resource adds to the problem of inaccuracy in planning.

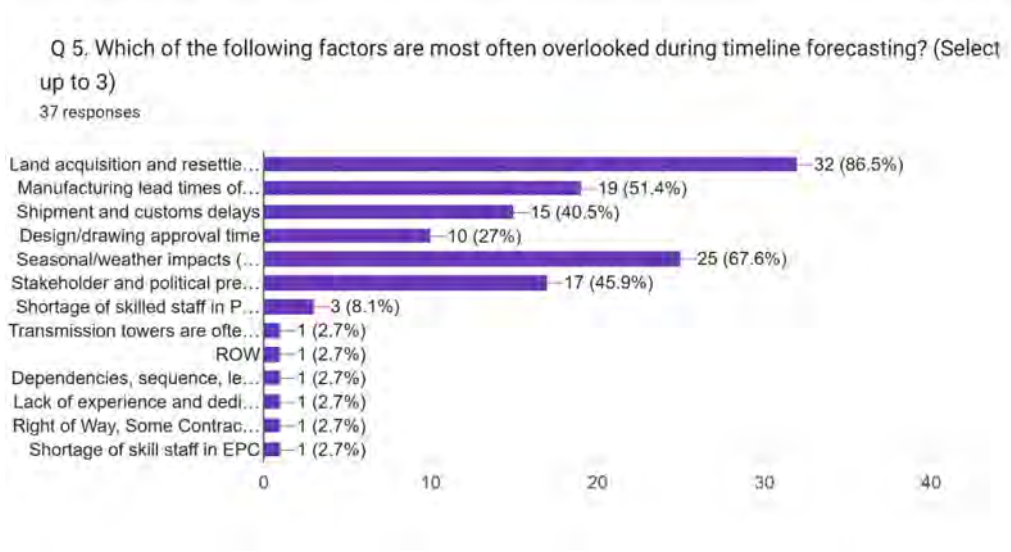


FIGURE 4: FACTOR OVERLOOKED DURING TIMELINE FORECASTING

Concerning the external factors that affect timeline setting, a significant percentage of the respondents affirmed that political pressure and expectations of the donor have a strong influence on the procurement and implementation schedules. About 43% supported and 21.6% greatly supported the fact that such outside influences tend to take precedence over technical factors, and hence 21.6% were neutral. This implies that unrealistic planning assumptions are often motivated by external requirements like fiscal-year targets, donor deadlines or ministerial requirements, which degrade the technical validity of project schedules.

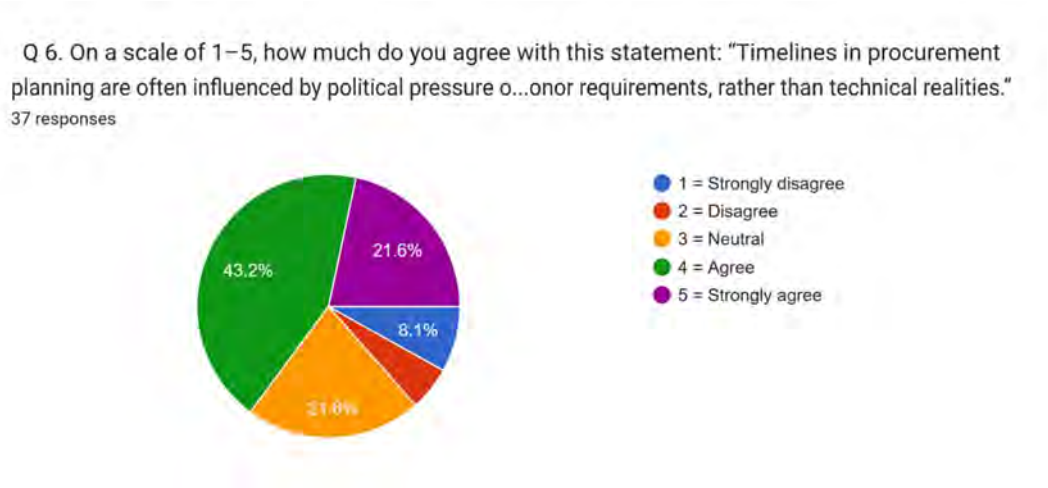


FIGURE 5: INFLUENCE ON TIMELINE FORECASTING

In general, the results provide a picture that the timeline forecasting of Power Grid is characterized by the lack of institutional optimism, neglected variables of operation, and external political or donor factors. In order to enhance the accuracy of forecasting, respondents indirectly indicate the necessity of risk-based schedule, interdepartmental approval of project schedules, and ground-level data incorporation (e.g., land readiness, logistic lead times, and weather constraints) prior to the completion of DPP schedules. These analytical and procedural underpinnings should be reinforced in order to increase the plausibility and viability of the project planning model of Power Grid.

5.2.3 Evaluation of Tendering Process

- The results of the survey allow conclusively stating that the current Lowest-Price (L1) approach employed in the Power grid Bangladesh (Power grid) tender assessments is not viewed as sufficient in terms of quality assurance and the timely project implementation. About 79 percent of the respondents were not satisfied with the lowest-price model as they noted that the contractors who secure tenders based on the lowest cost only are likely to experience a lack of financial liquidity, availability of skilled manpower, and project schedules. Numerous respondents also reported that this process, though seeming transparent in theory, often leads to budget overruns and time extensions since it is often caused by the underperformance of contractors and ineffective project management. Even a very small proportion of the respondents thought that the L1 system is sufficient to protect the efficiency of the

projects, which supports the idea that price-only competition undermines the long-term value.

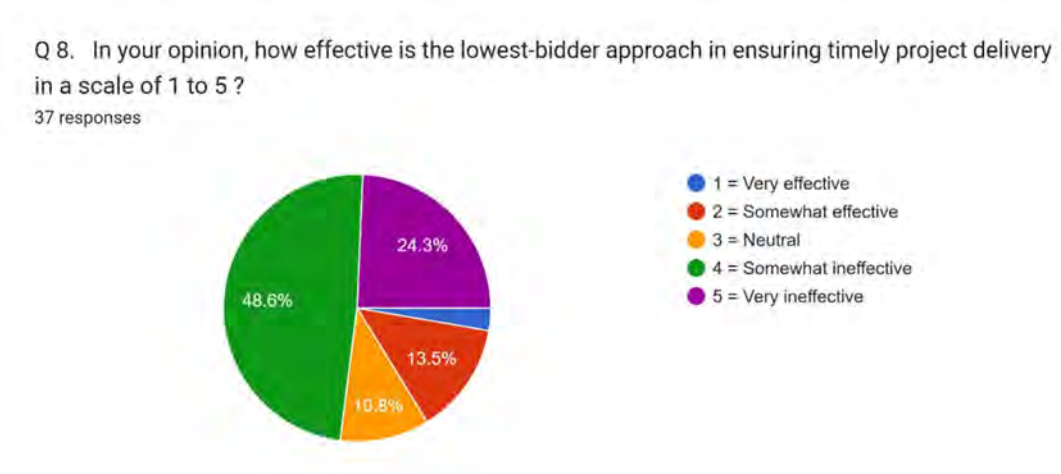


FIGURE 6: EFFECTIVENESS OF LOWEST BIDDER APPROACH

- Conversely, 92 per cent of the respondents were in favor of the implementation of a Weighted Evaluation Model, which incorporates financial and non-financial parameters in bid evaluation. In this proposed model, the following attributes would be evaluated to determine the more balanced and realistic evaluation result: technical capacity, financial soundness, manpower adequacy, past project performance, and equipment availability with price. The proportion of participants who were neutral was very small, with an even smaller proportion (2.7) who disagreed with this view, meaning there was a wide institutional support to reform the current evaluation system. Another point raised by respondents is that without impairing the transparency or fairness, a weighted scoring system would put the practice of Power Grid in accordance with the principle of Most Economically Advantageous Tender (MEAT) which is commonly used in ADB and World Bank-financed projects.

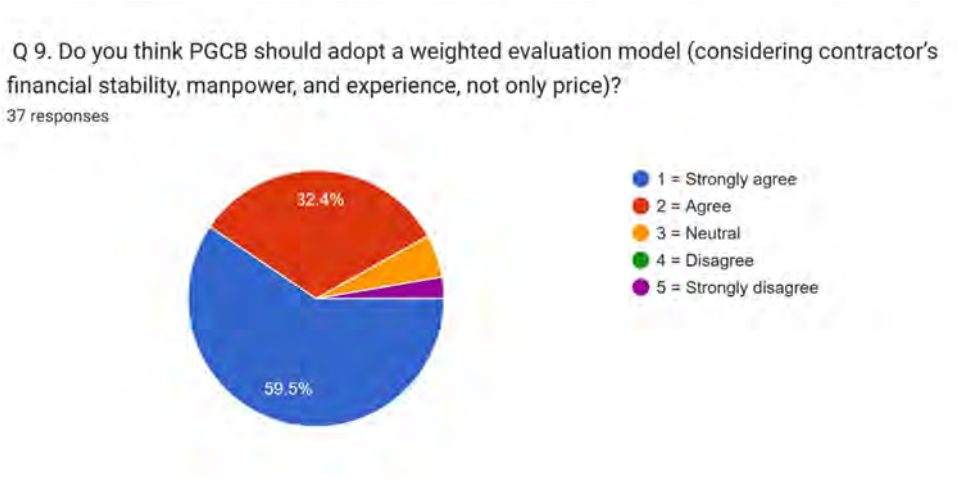


FIGURE 7: OPINION TO ADOPT WEIGHTED EVALUATION METHOD IN POWER GRID

- The responses to this question indicate that changes or extensions of the Development Project Proposals (DPPs) are a common phenomenon in the projects of Power grid Bangladesh (Power grid) mainly because of the unrealistic forecasting of the timeline during the planning phase. About 68 percent of the respondents graded this problem at 4 or 5 out of 5, which means that the DPP updates are necessary, more often and very often, to make the project schedules consistent with realities of project implementation. These respondents mentioned the delays in land acquisition, lengthy approval process, slow procurement and construction activities as the primary causes of time extensions that were recurrent. Approximately one-fifth (21%) gave a mid-scale opinion (3), in which they recognize that, although not all projects undergo revision, the issue is recurrent in complex or donor-funded projects. Only 11% of respondents rated it 1 or 2 indicating that it is not uncommon to complete it in a timely manner without DPP modification.

5.2.4 Unrealistic Project timeline planning in DPP

Answers to this question have shown that changes or extensions of Development Project Proposals (DPPs) are a common phenomenon in the Power Grid Bangladesh (Power Grid) projects, and are mostly due to unrealistic time line predictions in the planning phase. About 68 percent of the respondents indicated this issue as a 4 or 5 on the five-point scale, which means that DPP revisions are often or very often needed to reflect project schedules on actual implementation realities. The delays in land purchase, the long approval procedures, and the slow procurement and construction processes were the reasons mentioned by these respondents as the primary causes of constant time extensions.

Approximately 21 percent offered a mid-scale rating (3), admitting that not all projects are revised, but the issue is recurrent in complicated or donor-funded projects. The proportion of participants who rated it at 1 or 2 is only 11% meaning that complete timely completion without DPP alteration is not that common.

In general, the results show that the problem of timeline inaccuracy has become structural within the project-planning structure of Power Grid. Frequent extensions of DPP do not only postpone the physical.

Both the completion of projects and also cause administrative issues like fund-reallocation approvals and the re-scheduling of loan disbursements. This data highlights the necessity of more realistic and evidence-based scheduling, better risk assessment when the project is being developed and more co-ordination between the planning and procurement and implementation departments to ensure that the future projects are not as dependent on DPP revisions.

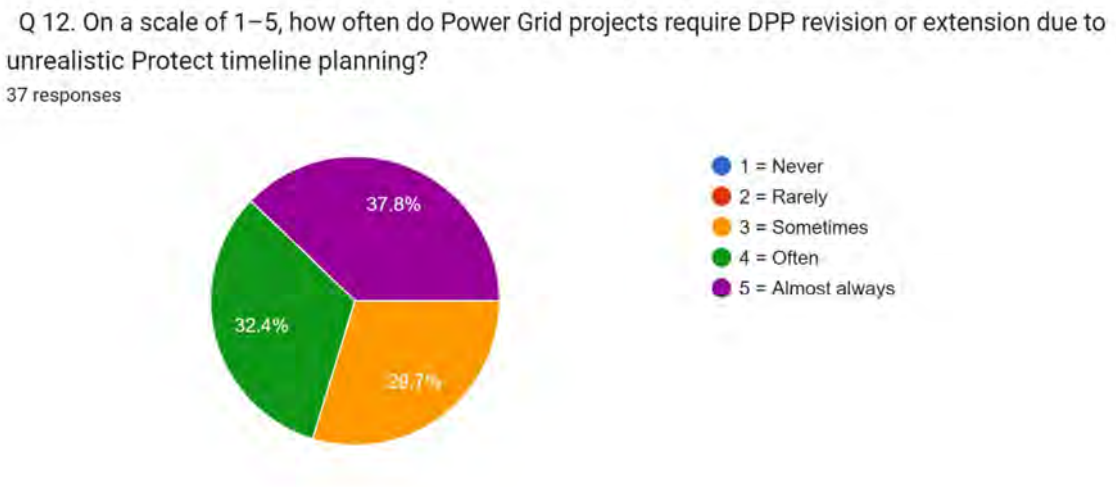


FIGURE 8: DPP REVISION DUE TO UNREALISTIC PLANNING

5.2.5 Causes of Delays

The three most common reasons of delay were found:

1) Acquisition and local opposition of transmission lines.
2) Political and social opposition.
3) Lack of financial strength of the contractors and employment of unskilled labor force.

- The survey findings of this question point out that the most prevalent reasons behind the delay in the projects of Power grid Bangladesh (Power grid) lie in the procedural, administrative, and external obstacles. Land acquisition disputes were the most common cause of delay by the majority of respondents (67.6%) indicating the ongoing problem Power Grid has in securing Right-of-Way (RoW) and settling compensation problems with land owners. The second because that was most common with 59.5 percent was the political and social resistance especially in regions where transmission-line construction is faced by local resistance or political influence. The poor financial ability of contractors was also a significant issue, noted by 54.1% of respondents, implying that not all of the companies receiving awards can afford to have sufficient cash flow and mobilization of resources throughout the project execution process.
- Besides this, 43.2% of the participants reported manufacturing and shipment delays of imported equipment, which shows the high reliance on the foreign suppliers and logistical issues. Multi-ministerial approval and vetting delays (35.1), delayed design approval by consultants or clients (24.3) and absence of skilled project or procurement staff (21.6) were also noted. Other less common problems cited by some respondents included delays in payments, right-of-way problems or inadequate manpower in the contractor (around 2.7% each).

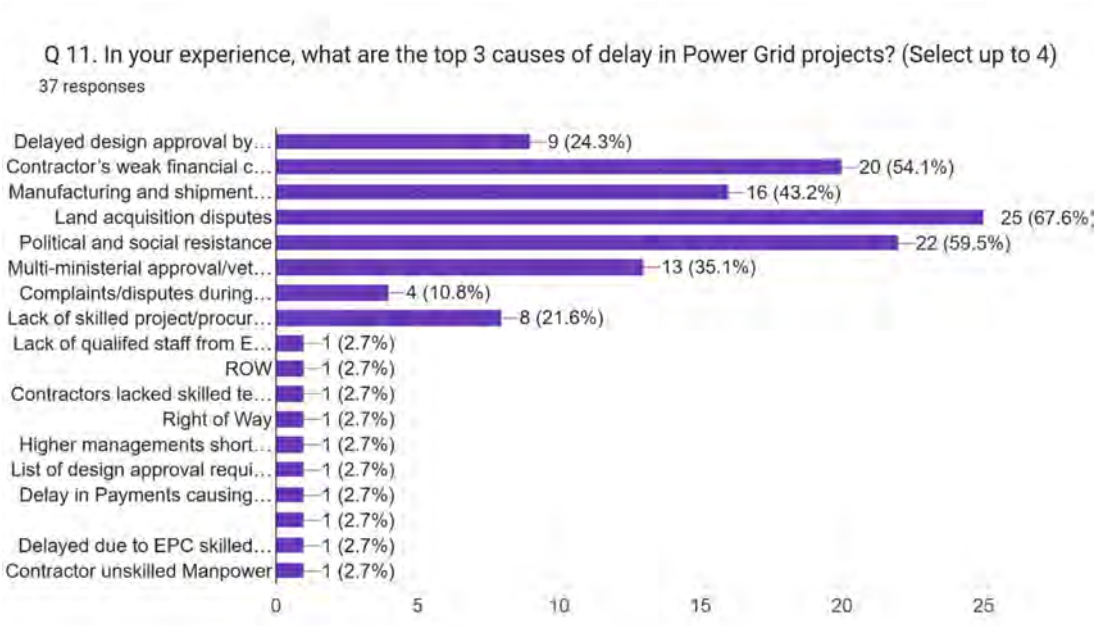


FIGURE 9: CAUSE OF DELAY OF POWER GRID PROJECT

- On the whole, the results prove that the delays in the project of Power Grid are caused by the complicated interaction of administrative

bottlenecks, socio-political factors, and financial and logistical constraints. To overcome these issues, a combination of reforms will be necessary to address them, including streamlining the approval process, better land and stakeholder management, financial screening of contractors, and better capacity to plan projects in time and predictably.

5.2.6 Institutional Capacity

The answers to this question show that there is a general feeling that Power grid Bangladesh (Power grid) procurement staff lack adequate training on the specialized procurement procedures that are necessary in international development partners like ADB, world bank, JICA, and AIIB. A large percentage of those interviewed, which is about 65 percent, responded in the No, meaning that most of the staffs working on the donor-funded projects have minimal formal experience of the specifications of the standard bidding document, assessment standards, and the contract-management systems of these agencies. About 27 per cent of the respondents agreed to an extent that even though some senior officers or staff involved in past donor-funded projects do gain practical knowledge, this knowledge is not always shared or made an organizational part. Only eight percent of the respondents felt that procurement staff are well trained citing a few cases of workshops or short-term trainings which are done within particular projects.

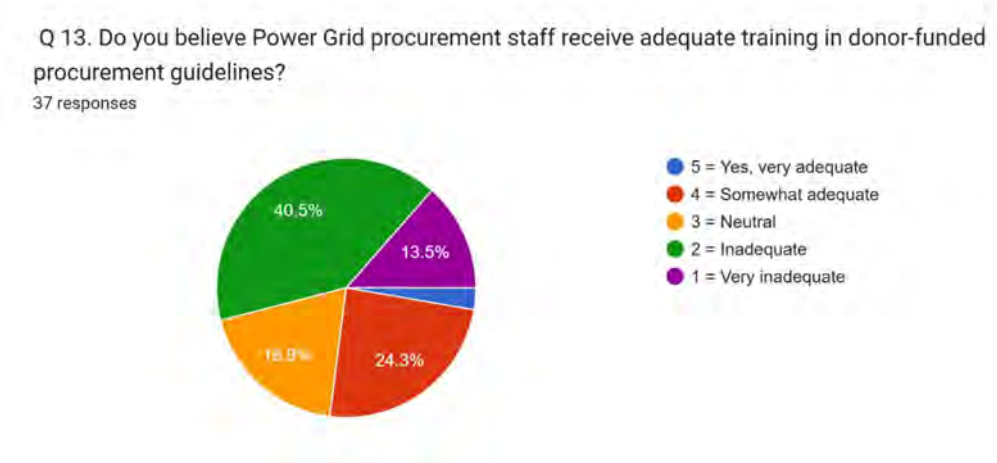


FIGURE 10: POWER GRID STAFF'S TRAINING ON PROCUREMENT GUIDELINES

On balance, the results point to a serious gap in knowledge and practice of using the donor-specific procurement rules, which is frequently followed by the error of procedure, inconsistencies in the evaluation, and the delay in receiving the "No Objection" approvals of the financiers. In order to solve this problem, respondents recommended that Power grid should have

regular and structured training programs and knowledge database on donor-funded procurement practices should be centralized. The enhancement of this institutional capacity would enhance compliance, shorten approval turnaround times, and eventually increase the efficiency and credibility of the project procurement activities of Power grid.

5.2.7 Most urgent improvement to ensure timely project delivery

The results of the surveys indicate that there is a strong agreement that procurement planning and forecasting along with contractor selection and supervision are most problematic areas that need urgent enhancement in the Power grid Bangladesh (Power grid) in order to deliver projects on time. Among all the answers, these two areas were mentioned in over 80 percent of the entries, which is evidence that inefficiencies in the initial phase of tender preparation and poor control during the execution are the primary factors of schedule deviation. About 51 percent of the respondents also cited stakeholder management especially the management of landowners and local communities as a factor that frequently causes delays in the site ownership and the commencement of the project. Moreover, approximately 43 percent noted staff training and capacity building as a critical enabler to enhance procurement and contract-management processes, and 25 percent noted the necessity of changing ministry-level approval and vetting processes which often lengthen the bid assessment and contract award process. A smaller yet significant proportion of respondents (15 percent) identified tenders evaluation as the other area that should be standardized and transparent.

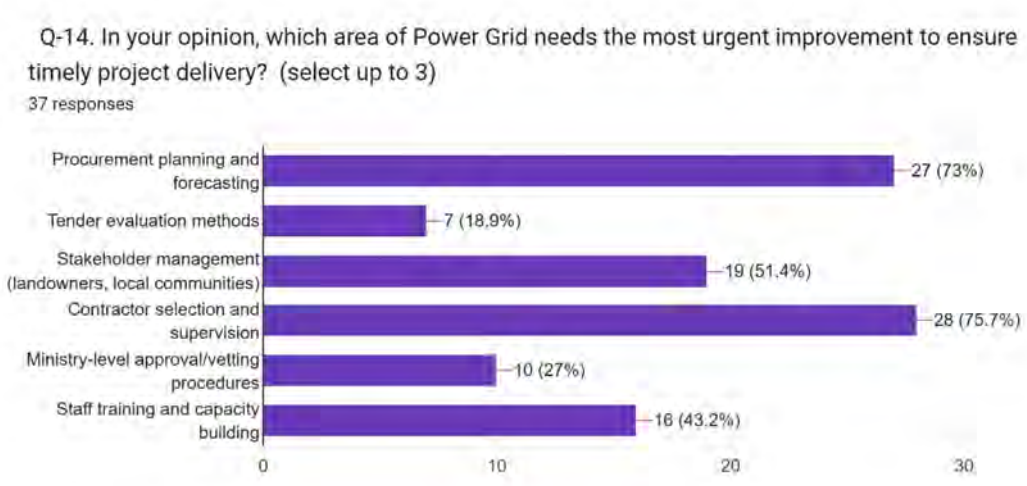


FIGURE 11: URGENT IMPROVEMENT REQUIRED IN POWER GRID DELIVERY

In general, the discussion indicates that the delays in the project-delivery of Power Grid are based more on the procedural and managerial inefficiencies than on the technical issues. The management of these institutional bottlenecks by procurement planning at an early stage, simplified approvals, tightened contractor control, and improvement of employee competency would have a huge impact on schedule compliance and project performance in high-voltage transmission and substation work.

5.2.8 Problem in Power Grid's project completion delays from planning time line

The responses to this question were analyzed to show that the main reason why projects are not completed on time in Power grid Bangladesh (Power grid) is the inefficiency and time taken in the procurement and approval processes. A high percentage of the respondents (approximately 50) cited that prolonged administrative approvals at both internal and ministry level as well as prolonged tender assessment and awarding of contracts lead to long time delay between the planning and the implementation of the project. The other 27% of the respondents cited delays as due to contractor performance problems, including poor mobilization of resources, poor supervision and non-compliance with contractual milestones. Approximately 15 percent cited land-related and stakeholder issues especially slow acquisition and resistance among locals as a common problem to project start-up. Only a lesser percentage (10%) cited that poor coordination between design, planning, and procurement units was a major contributor, with overlapping of responsibilities and lack of accountability being a common aspect resulting in rework and revision.

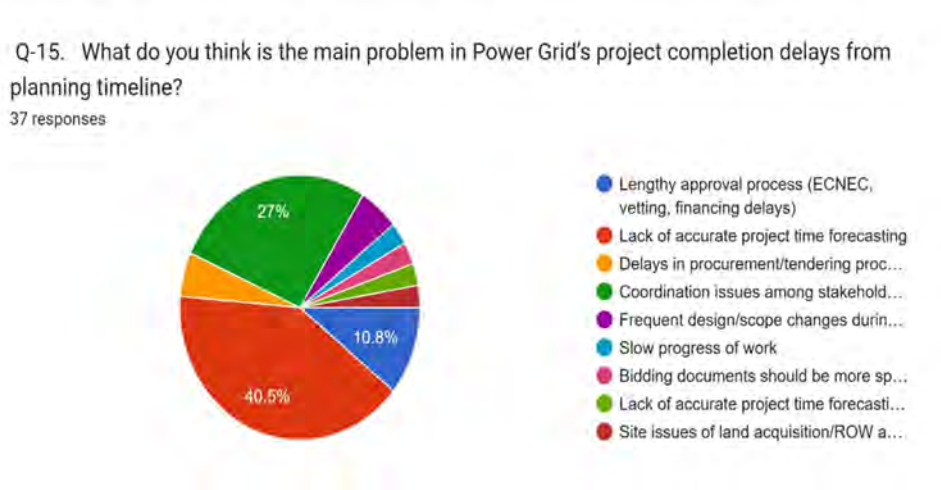


FIGURE 12: MAIN PROBLEMS FOR PROJECT COMPLETION DELAY

In general, the data of the survey have shown that the project delays in Power grid are majorly caused by institutional and procedural bottlenecks and not technical constraints. The reduction of the procurement processes, acceleration of the external vetting, and the implementation of the contractor performance monitoring can significantly increase the compliance with the planning schedule and the improvement of the efficiency of delivering high-voltage substation and transmission lines projects.

5.2.9 Knowledge of Procurement staff in International Trade

Answers to this question will show that there is a general apprehension about the lack of knowledge among participants about the specifics of international trade and logistics processes among those in charge of establishing procurement schedules at Power Grid Bangladesh (Power Grid). About 65 percent of the respondents claimed that majority of the officials in tender planning do not have proper practical exposure to the import and export laws, shipping arrangements, customs clearance and documentation necessities which in most cases results in unrealistic project scheduling. Approximately 16% were partially in agreement with this saying that although some senior officers have general knowledge, it is not being systematically transferred and institutionalized in the organization. Only 19 percent of interviewees thought that the employees of Power Grid possess adequate knowledge in these spheres and refer to the experience in the projects funded by ADB or JICA as useful but not ubiquitous.

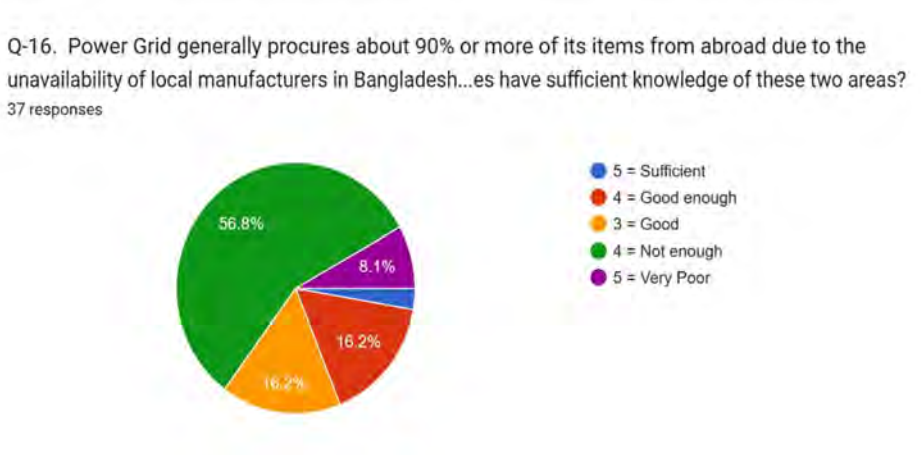


FIGURE 13: STAFF KNOWLEDGE ON INTERNATIONAL TRADE

On the whole, the results indicate that there is a large gap in capacity in the area of international procurement and logistics management and it directly influences the quality of project-timeline prognostication. The findings

indicate that Power Grid would require specific training in global sourcing, international incoterms, international port management and international shipment lead-time estimation. Improving these competencies would help the procurement planners to prepare more realistic and achievable project schedules, which would lessen the number of delays associated with import dependencies and disruptions of supply-chain networks.

5.2.10 RoW-related challenges during project timeline forecasting

Answers to this question reveal that there is a high degree of agreement that the challenges of Right of Way (RoW) are impossible to predict completely during the project timeline forecasting in Power Grid Bangladesh (Power Grid).

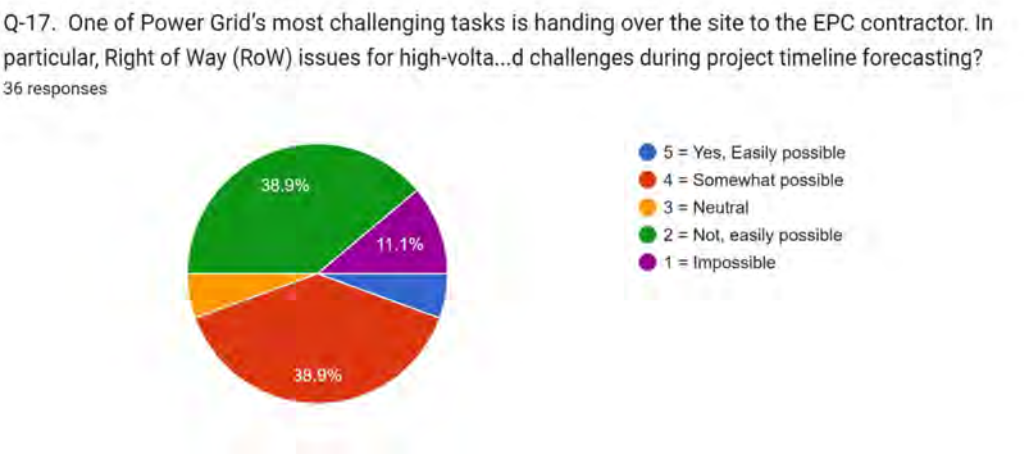


FIGURE 14: ROW ISSUE FORECASTING

About 71 percent of the respondents denied the fact that all the RoW-related complications can be entirely resolved during the planning phase. They highlighted how unpredictable land ownership conflicts, compensation payment delays and local opposition or opposition by government agencies tend to arise only after project mobilization and thus it is hard to factor in realistic time contingencies. Approximately 19% of participants partially claimed this, indicating that even though forecasting of all issues at the site level is impossible, early engagement of stakeholders and comprehensive survey of the routes may reduce uncertainty. The percentage of the respondents who thought that appropriate coordination of the district administration, land authority, and the regional offices of Power Grid would

enable them to forecast the RoW clearance timelines more accurately was around 10% only.

On the whole, the results highlight the fact that RoW problems are one of the most unforeseeable and time-consuming influences on high-voltage transmission line projects. The answers indicate that Power Grid needs to be proactive and community-oriented in the planning of route alignment and compensation, considering risk buffers in project timelines and enhancing the cooperation with the local governments. This would assist in curbing the unexpected delays and also enhance the precision of the project completion estimates in the development programs that are yet to commence.

5.2.11 Possibility of maintaining the Procurement Plan (PP) by the procurement staff

The answers to this question suggest that the procurement plans discussed in the Development Project Proposal (DPP) or Annual Procurement Plan (APP) are not adhered to by the procurement personnel of Power grid Bangladesh (Power grid) when executing any projects.

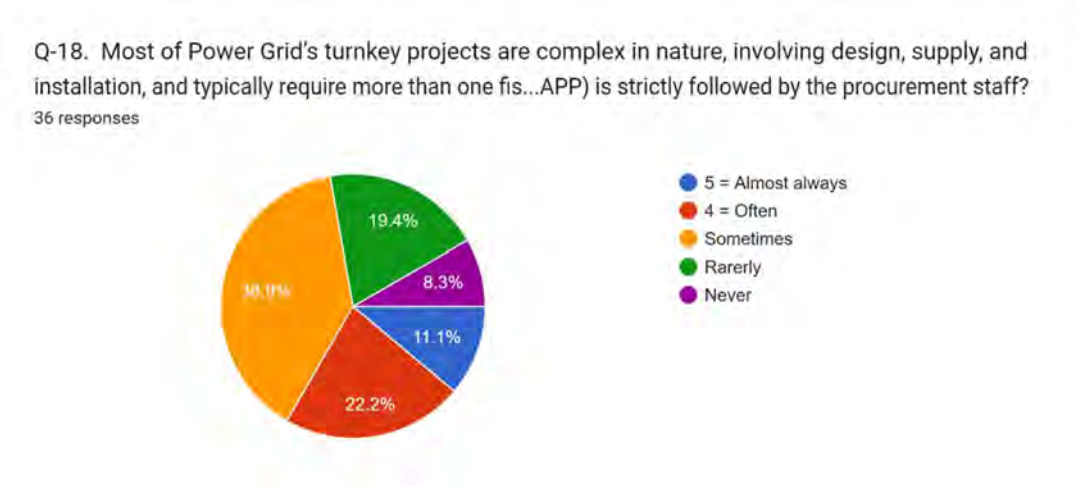


FIGURE 15: FOLLOW THE PROCUREMENT PLAN SCHEDULE

A large proportion of about 68% of the respondents noted that procurement processes often go off budget as the scope of the project is altered, the technical specifications are amended, the process of approving funds is delayed and unforeseen administrative snarl ups. About 22 percent of the respondents partially agreed and stated that even though there is an effort to ensure that the tendering schedules are in line with the approved plans, other external factors like donor agency clearances, complexities of bid evaluation and inter-departmental coordination issues tend to derail the compliance. Only a small portion of the respondents felt that the timelines of

the DPP or APP are followed, based on some few cases where early planning and focused monitoring of the projects made sure that prompt commencement of the tender.

In general, the results indicate that the process of implementing the procurement activity at Power Grid is inconsistent in terms of the planned and actual schedule, primarily because of the institutional delays and the lack of flexibility in the plan revision systems. The evidence highlights the necessity of a more dynamic and constantly updated procurement scheduling system with the assistance of regular reviews and online tracking tools to enhance the alignment of planning documents and real-time implementation. Enhancement of adherence to DPP/APP procurement schedules would improve transparency, accountability and predictability of the project delivery cycle.

5.2.12 Skilled manpower to anticipate uncertain complexities during the planning stage to forecast an accurate project timeline

The replies to this question show that most of the Power Grid Bangladesh (Power Grid) officials feel that the organization has inadequate skilled technical manpower to predict and forecast the complexities of EPC-based projects especially projects with difficult site conditions like river-crossing foundations and riverbed structures. About two-thirds of the participants indicated that the existing personnel frequently use consultants and contractors to make technical estimations because of lack of expertise in-house with reference to geotechnical risk assessment, specialized foundation design, and hydrological analysis. Approximately 23 percent of the respondents agreed partially, by admitting that though Power Grid has competent engineers in some of its divisions, there is no even distribution of the expertise in all projects and in all regions. Only 11% of the respondents were of the opinion that the current workforce is knowledgeable enough to assess such uncertainties at the planning phase.

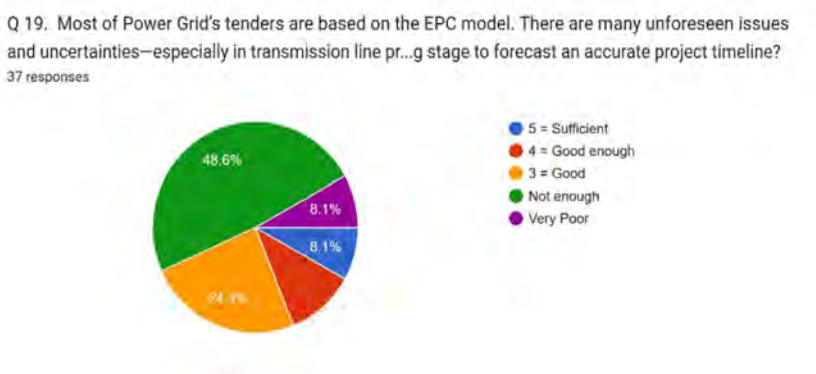


FIGURE 16: STAFF AVAILABILITY FOR UNCERTAIN ISSUES FORECASTING DURING PLANNING

In general, the results demonstrate the limitation of capacity in the technical project forecasting, especially with complex EPC and design-build contracts. The findings indicate that Power Grid ought to invest in the specialized capacity-building programs, including high-level training in transmission-line engineering, soil-structure interaction, and risk-based design evaluation. Increasing such internal capabilities would help the organization to detect site-specific challenges earlier in the project, create more realistic project schedules, and decrease the reliance on outside consultants to provide vital planning data.

5.2.13 Weaknesses in the evaluation methodology

The survey results indicate that there is a strong agreement that flaws in the tender evaluation process usually led to the choice of less experienced contractors, which subsequently leads to delays in the project in Power Grid Bangladesh (Power Grid). Approximately 74 per cent of the respondents agreed or strongly agreed with the statement and observed that the evaluation process currently gives too much emphasis on lowest-price criteria (L1) instead of a balanced approach to evaluation of technical capability, resource adequacy, and past performance. This cost-reduction strategy as they noted, tends to prefer bidders with little experience who, in the future, find it difficult to acquire resources or keep the schedule on schedule. Approximately 18 percent of the respondents agreed partly, recognizing that although the assessment process is conducted based on the set rules of the public-procurement, the lack of criteria of the performance-based scoring restricts its performance. Only 8 percent of the respondents disagreed, saying that delays are more directly associated with administrative bottlenecks than with contractor capacity.

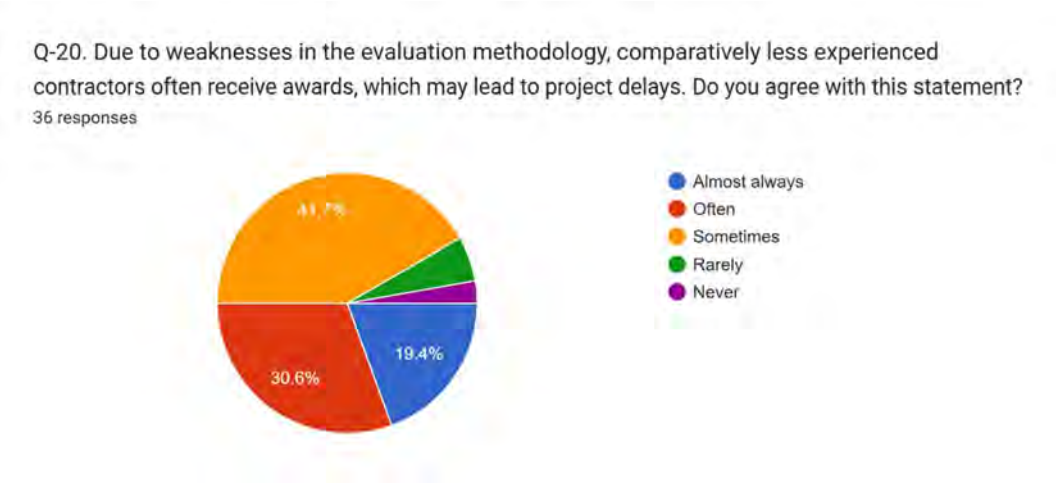


FIGURE 17: DELAYS DUE TO WEAK EVALUATION METHODOLOGY

In general, the results show that the methodology reform of evaluation is essential to enhance the project results in Power grid. Implementation of a quality and performance-based assessment model - one that incorporates weightings of technical expertise, experience in project and financial soundness - would go a long way in eliminating the post-award problems. It would be better to create more distinct qualification standards and improve the training of assessors to make sure that only competent and capable companies receive contracts that would make the process of delivering a project even more efficient and reliable.

5.2.14 Delays in fund release from financing agencies

The answers to this question suggest that there is almost unanimity among the participants that the delay in the release of funds by financing agencies, be it by Government of Bangladesh (GoB) or other foreign development partners, has a huge consequence on project timelines in Power Grid Bangladesh (Power Grid). About 82 percent of the respondents said that they would agree or strongly agree that late payment of funds at the construction stage usually leads to disruption of contractor payments, delays in the procurement of materials and also stops the activities on the site especially those EPC contracts funded by foreign countries that require the use of Letter of Credit (LC). Approximately 13% answered partially, indicating that even though problems at the fund-release point are not necessarily the primary delay cause, they often add to other delays like late approvals or procurement bottlenecks. A minority of only 5% of the respondents said that they disagree and that effective projects with active financial coordination can occasionally absorb short-term cash-flow limitations without significant schedule effects.

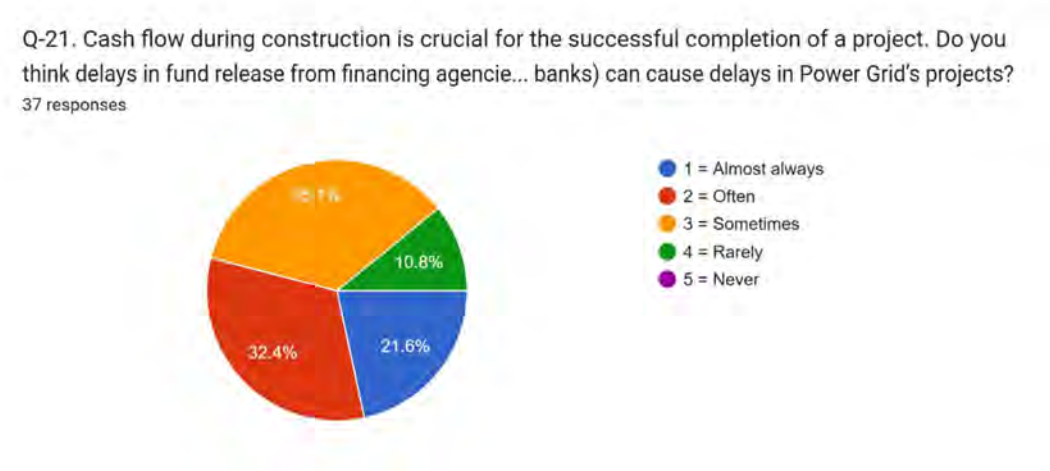


FIGURE 18: DELAYS DUE TO FUND RELEASE

On the whole, the results validate that the promptness of the release of funds is a decisive factor of the continuity and completion of the projects. The information highlights the necessity of better coordination between Power Grid and Economic Relations Division (ERD) and external financiers to simplify the disbursement processes and reduce bureaucratic lags. An effective predictable and transparent financial flow mechanism and better forecasting cash-flow of projects would assist to ensure constant development and avoidance of time overruns in current and future power-transmission development projects.

5.2.15 Reforms or changes recommendation to improve the accuracy of project timelines

Answers to the open-ended question concerning the suggested reforms displayed various themes that were duplicated and based on the improvement of the realism and reliability of the project-timeline forecasting in Power grid Bangladesh (Power grid). The most common proposal was to reinforce the planning of procurement at its initial stage through ensuring that the DPP schedule and the APP schedule are harmonized with the actual market and approval lead times. Numerous respondents highlighted the necessity of digital monitoring systems to monitor the achievements of procurement, the flow of funds, and the development of the contract in real time to allow managing bottlenecks proactively. Quite a high percentage also suggested capacity-building programs to enhance knowledge of the staff on international procurement, logistics, and risk-based schedules. Some of the respondents suggested a change in the tender-evaluation procedures to focus on the technically qualified and experienced contractors rather than on the lowest-price tender. Others emphasized on coordination of departments,

especially planning and design and procurement departments and demanded more autonomy at the project level to hasten decision-making.

In general, the answers indicate a shared wisdom that to ensure timeline accuracy in Power Grid, there has to be a systemic reform strategy, which is a combination of simplification of the processes, digitalization, capacity increase, and responsibility provision so that reactive delay management can be replaced by proactive and data-driven project scheduling.

5.2.16 Balancing the transparency with quality and timely project delivery

Answers to this question reveal that the majority of the participants consider that Power Grid Bangladesh (Power Grid) should not remain on the lowest-price (L1) focus in order to attain the desired transparency and time-quality and high-quality project results. Although it is understandable that transparency is a requirement of the public-procurement rules, the respondents pointed out that overemphasis on price frequently leads to the process of giving contracts to the bidders with limited capacities, which inevitably leads to cost increases and schedule overruns. A most proposed solution was the introduction of a Most Economically Advantageous Tender (MEAT) or Quality-and-Cost-Based Selection (QCBS) system where both technical competence and price were given equal weight.

Some members also suggested more explicit prequalification standards, consideration of previous performance and resource capacity when evaluating bids and more training of evaluation committees to enhance objectivity. Other people highlighted that the use of digital e-procurement tools would increase transparency, but it would also be possible to conduct multi-criteria evaluation.

On the whole, the results indicate that Power Grid may achieve the maximum balance between transparency and performance through the value-for-money strategy, i. e. keeping transparent in terms of price assessment but rewarding competent and experienced contractors who are able to complete projects on time and deliver them efficiently.

5.3 Case Study Insights (from Chapter 4)

The two case studies, which are the IDB and ADB funded Power Grid Expansion Project and the World Bank funded ECGSTL Project, obviously support the stakeholder perceptions obtained during the survey. Both projects share

commonalities of unrealistic planning, poor performance of the contractors and institutional inefficiencies that all lead to time and cost overruns.

- **Unrealistic DPP Timelines:** Unrealistic DPP Timelines: There was unrealistic implementation schedules set in both projects at the DPP stage. The time that was required to acquire land, engage consultants or donor approvals was not adequately factored into the planned timelines. In both instances, the projects were required to be subjected to numerous extensions and revisions of DPP to fit the completion dates. This is exactly in line with the survey data, according to which more than half of the people surveyed deemed the DPP timelines of Power grid as somewhat unrealistic. It has been demonstrated that project timeframes were to a great extent established through administrative benchmarks instead of a solid evaluation of technical and procedural limitations.
- Contractors Underbidding and Financial Problems: One of the key issues that were found in both case studies was the problem of underbidding by contractors that is motivated by the lowest-price (L1) assessment procedure. Some of the contractors also offered unrealistically low prices to secure contracts and ended up experiencing severe cash-flow deficits, which slowed down mobilization and the acquisition of important materials. This trend proves the survey result that 79 percent of the people consider the lowest-price system as ineffective in ensuring that the projects are completed on time. The Power Grid Expansion Project funded by IDB was characterized by the financial constraints of a prime contractor that resulted in the delayed delivery of the shipment, the lack of work on the site, and constant appeals to extend the contract to the contractor, which proves the long-term risks of a price-focused assessment.

- External and Environmental Factors That were not taken into consideration during planning: Both projects have been heavily influenced by the land issues, issues with access due to monsoon, and delays in shipments which were not properly considered in the planning. The Power Grid Expansion Project had long delays in getting the Right-of-Way (RoW) of the transmission lines, land handover problems as the ECGSTL project had significant delays during the rainy season and equipment delivery through ports and some unexpected events occurred due to the lack of supervision and the use of unskilled manpower by the EPC. Such real-world challenges are reflected in the survey results with 86.5 percent of the participants reporting land acquisition and 67.6 percent indicating seasonal/weather effects as significant unaddressed issues during the timeline forecasting.

- Leadership and Institutional Bottlenecks: The main institutional weaknesses witnessed in the two projects were frequent change of Project Directors and lack of skilled design engineers. Every change in leadership interrupted continuity in decision making, approval delays and watered down accountability. Besides, technical skills deficiency in design, supervisions, and procurements departments led to bottlenecks in the attraction of reviews, tender reviews, and contract administration. These issues resonate with the outcomes of the survey that showed the lack of training and institutional capacity to manage complex donor-funded procurement processes.

Summary:
To sum up, these two case studies reveal the interaction between unrealistic DPP schedules, contractor non-performance, external factors and institutional failure to create significant delays in projects. The following real life case studies confirm the survey data, and the necessity of risk-based scheduling, balanced evaluation model, and more efficient institutional capacity to increase project delivery efficiency at Power Grid Bangladesh.

5.4 Thematic Discussion

The findings of the survey and the case study analysis have been discussed in major thematic areas that were aligned to the purpose of the research. These themes are the underlying institutional, procedural and contextual issues that cumulatively impact on the efficiency of the tendering process of Power Grid and the realism of the project timelines.

5.4.1 Institutional and Planning Inefficiencies

One of the common themes that are prevalent in both the survey and case study is the systemic failure in planning the project at the initial stages. Over fifty-one percent of the respondents (51.4) found the project timelines established in Development Project Proposals (DPPs) to be somewhat unrealistic with only 10.8 percent viewing them as realistic. As observed in both Case evidence of the IDB-funded project 400/230/132 kV Grid Network Development Project and the WB-funded project Enhancement of capacity of Grid Substation and Transmission Lines for Rural Electrification Project, the reason behind the frequent revisions of the DPP and scheduling extensions was a result of an overly optimistic timeline.

The evidence indicates that DPP schedules are often affected by administrative or donor pressures as opposed to ground-level preparedness tests. Some of the factors that the respondents thought were not considered in the planning process included land acquisition (86.5%), seasonal/weather impacts (67.6%), and manufacturing or shipment lead times (51.4% and 40.5%), which have a direct influence on implementation. This is in line with the project management literature

that states that the inability to consider exogenous risks and site preparedness contributes to the occurrence of chronic schedule overruns in infrastructure projects.

Therefore, one of the main areas of institutional reform that Power Grid should undertake is the development of risk-based scheduling approaches and cross-departmental timeline checks at the DPP formulation stage in a way that the project timeframes are based on data and are not administratively determined.

5.4.2 Weaknesses in Evaluation and Contractor Selection Practices

The other important theme is the weaknesses of Lowest-Price (L1) assessment system, which still prevails in the tendering process of Power Grid. About 79 percent of the participants found this to be an ineffective strategy of quality assurance and project completion within the required time. The two case studies were a great confirmation of this perception as contractors who had under-bid their projects later on were found to have cash-flow constraints, slow mobilization, and increased time extensions.

However, by comparison, 92% of the participants supported the use of a Weighted or Most Economically Advantageous Tender (MEAT) evaluation model, which incorporates technical capacity, financial soundness, previous performance, and manpower adequacy in addition to price. The steadiness of the technical experience and financial stability as the top-ranked in the survey is another indication that the Power Grid professionals value the competence and reliability more than the nominal price advantage.

The results are in line with the international best practices that have been suggested by the multilateral development banks (ADB and World Bank) that promote value-for-money procurement models. The thematic implication is obvious: the assessment system developed by Power Grid needs to be modernized to be less cost-centric and more performance-oriented in terms of providing tenders, as well as to increase the quality of assurance and predictability of delivery.

5.4.3 Capacity and Institutional Competence

One of the common problems obtained during the survey is the absence of institutional capabilities and technical skills on the part of the procurement and project employees of Power Grid. Roughly 65 percent of the respondents indicated that authorities lack proper training on how to work with donor-funded procurement procedures, and only 8 percent of them thought that their abilities were adequate. This finding was supported by the case studies- delays in evaluating bids, documentation mistakes, and nonconformance with the procedures were

common because of insufficient knowledge of the ADB and IDB procurement systems.

In addition, we have noted that change of Project Directors very often and lack of qualified design engineers undermined project continuity and accountability. This instability of leadership does not only interrupt with the decision making but also erodes institutional memory and institutional learning. The respondents thus suggested systematic capacity-building exercises, such as certification-based training, frequent refresher training and establishment of specialized procurement and scheduling departments to enhance technical and managerial competence.

The findings suggest that sustainable enhancement of the performance of Power Grid can be achieved by developing human capacity, and not just by the reform of the procedures. The knowledge retention, continuity of leadership and institutional learning is needed to minimize the planning mistakes and delays in the course of the project in the future.

5.4.4 External and Environmental Constraints

The results of both surveys and case studies indicate that external challenges are a decisive factor of project delays. Acquisition issues in land areas, local stakeholder opposition, weather conditions like floods or monsoon damages are some of the factors that Power grid cannot directly control but has far reaching impacts on the accuracy of the schedule. As an example, the Right-of-Way (RoW) clearance issues were mentioned in both case studies as a major cause of contractor mobilization delays.

5.4.5 Financial Flow and Contractor Performance

The other theme is powerful is the impact of cash-flow and financing delays on project delivery. Approximately, 82 percent of the respondents concurred with the idea that project delays in terms of funds release (either by the Government of Bangladesh or by external financiers) result in project delays and prolonged project completion. The case studies established that late disbursements and approval of LCs tended to interfere with the payment schedules and site development especially in EPC-based projects that depended on imported equipment.

Further, one of the most recurrent problems was the financial capacity of the contractors. Approximately, 54 percent of respondents cited weak contractor finances as a major delay factor, which is in line with the evidence in the case study of undercapitalized contractors that were unable to sustain progress.

These results suggest that tighter prequalification screening and financial due diligence is necessary to make sure that only technically competent and solvent bidders get contracts.

5.4.6 Leadership, Governance, and Institutional Culture

Lastly, cross-cutting constraints were issues that concerned leadership and governance. The frequent turnover of Project Directors and minimal delegation of authority and bureaucratic levels of approvals are some of the things that lead to procedural bottlenecks that slow down decision-making. The continuity of leadership and decision authority in time were cited by the respondents as essential in keeping projects on track.

The thematic implication is that Power grid needs to shift to a more responsible and performance oriented institutional culture where there is project ownership, continuity and effective communication between division. The reinforcement of governance institutions (e.g., digital monitoring tools, milestone-based progress reviews, and transparent reporting) would be a major improvement of the coordination and a decrease in institutional inertia.

5.4.7 Thematic Synthesis

In all the themes, the main lesson learned is that the project delays in Power grid are mainly institutional and procedural and not necessarily technical. Incorrect timelines, poor evaluation standards, inadequate capacity and external forces all degrade accuracy of tendering and forecasting processes. The similarity between the survey results and the case study evidence proves that the problems are structural, which needs strategic changes instead of the corrective actions taken on the spur of the moment.

In order to address these challenges, Power grid needs to have a comprehensive improvement model that includes:

- Risk based and data driven project scheduling, Value-for-money procurement practices, Capacity building, and leader continuity, and
- Combined stakeholder management and financial management systems.

These steps would both harmonize the tendering and project-management practices of Power Grid with international standards and enhance

predictability in delivering them, as well as institutional responsibility in the power-transmission sector in Bangladesh.

5.5 Proposed Framework for Improvement

The overall review of survey responses, case studies and the themes that came out of the analysis show that Power Grid Bangladesh (Power Grid) needs to get a solid overhaul of its tendering and forecasting systems - something that involves a complete overhaul of its technical, procedural and institutional systems.

The proposed framework below pinpoints the top things that need to be done to make sure that project planning is more realistic, contractors are selected properly and there's a long-term plan in place for getting projects done on time.

5.5.1 Realistic Forecasting and Schedule-Optimization Model

A proper project time schedule is important in ensuring that nothing is done in an ineffective manner. The study reveals that the current schedules used in Power grid which are usually determined by targets and to conform to the expectations of donors - is one of the key areas of weakness.

In order to remedy this, Power grid must:

- Add a few buffers to accommodate unexpected holdups - the holdups that actually can cripple a project - the time it takes to get design and drawings approved, to get stuff shipped in, to get the land and to deal with seasonal disruptions.
- Start now start using a few more advanced forecasting tools such as Program Evaluation and Review Technique (PERT) and Monte Carlo simulation - these tools will demonstrate how uncertain things are, and help planners determine how much of a chance they have that they will meet a particular deadline.
- Establish a system of scheduling that considers the risks and uncertainties of the same a system that would associate each item to the duration that it is likely to be accomplished in in reference to previous projects.
- Get the people on the ground, the engineers, logistics and procurement planners engaged in the planning process early on so that you have a schedule built on what is really possible.
- Design a digital project dashboard that tracks the progress of the project and makes the forecast up-to-date with the real-time situation.

These modifications will assist to transform the planning process of Power grid to not be based on arbitrary deadlines but rather a solid and data-driven plan that is comparable to the best practices in the field.

5.5.2 Weighted Contractor-Evaluation System

It is evident that the desire to abandon the existing system of simply taking the first offer (92 percent concurred) and switch to a system that compensates competence and reliability is overwhelming. To ensure this is done, Power Grid must install a Weighted Tender Evaluation Framework such as the following:

TABLE 4: WEIGHTAGE EVALUATION CRITERIA

Evaluation Criteria	Proposed Weight
Technical competence and methodology	40 %
Financial capacity and liquidity	10 %
Skilled manpower and equipment resources	10 %
Past performance and client references	10 %
Price competitiveness	30 %

Implementation recommendations:

- Pilot This weighted model in future donor-financed EPC contracts at the directive of ADB or the World Bank to align with international procedures of the Most Economically Advantageous Tender (MEAT) procedures.
- Set up a uniform scoring matrix and evaluation-training program to bring about transparency and consistency.
- Always keep the bidding documents as transparent as possible with regard to evaluation criteria to uphold the ethics of fairness and accountability as required by the Public Procurement Rules (PPR).

This system will help Power Grid strike a balance between transparency and value-to-money to minimize delays due to the hiring of underqualified and under-resourced contractors.

5.5.3 Institutional and Capacity-Development Reforms

The case studies and the survey continually point to the lack of institutional capacity as one of the causes of the procedure delay and poor contract execution. In order to enhance the organizational capacity of Power Grid:

- Increase the technical and procurement staff, especially in design of substations, design of transmission lines and procurement analysis.

- Develop a well-organized capacity-building initiative, such as certification-based training on ADB/World Bank/IDB procurement standards, tools of project-management, and financial estimation methods.
- Establish a central Procurement Knowledge Hub where experiences of projects that have been done are captured and shared, so that there is institutional memory and standardization of best practices. Introduce a centralized Risk Register of all high-voltage and donor-funded projects to determine, categorize, and track possible risks associated with design, logistics, finance, and environment.
- Enhance the continuity of leadership through allocating the Project Directors to complete project cycles and devolving decision-making authority to minimize the delay in the bureaucracy level.
- Digitize internal coordination- integrate planning, design and procurement departments using an integrated project-management information system (PMIS) to provide real-time visibility and accountability.

Such reforms will assist in changing Power Grid into a performance-driven institution rather than a compliance-driven organization that will be able to handle the complex EPC projects with technological and managerial accuracy.

5.5.4 Financial-Flow and Stakeholder-Coordination Mechanisms

The disbursement of funds in a timely manner and a proactive stakeholder involvement are the key elements in keeping the project moving. Recommendations are made based on the survey results that indicate that 82 percent of interviewees complain of delays due to late release of funds, as follows:

- Plan ahead with ERD, Ministry of Finance and donor agencies to have a set schedule of disbursement and reduce bureaucratic bottlenecks.
- Use milestone payments triggers that are tied to confirmed physical developments so as to achieve uninterrupted cash flow to the contractors.
- Develop a stakeholder-engagement model (including landowners, local authorities, and communities) that incorporates early consultation and compensation planning to address conflicts of the Right-of-Way.
- Introduce the joint-review meeting with Power Grid, financiers, and EPC contractors periodically to discuss emerging issues before they will be transformed into extensions of time.

This joint financial and stakeholder approach will reduce two of the most intractable delay drivers in Power Grid endeavors:

- disruption of cash-flows and
- unresolved community resistance.

5.5.5 Integrated Reform Outlook

The suggested framework highlights that there is no single reform which can address the project-delivery issues of Power Grid on its own.

A synergistic implementation of realistic forecasting, weighted evaluation, institutional strengthening, and coordinated financing is the only way that Power Grid can attain sustainable increase in the efficiency of procurement and reliability of timelines.

All this would bring the operational practices of Power Grid in line with the international standards of the governance of the public-sector infrastructure, enhancing accountability, predictability, and performance of all high-voltage transmission and substation undertakings.

5.6 Conclusion

These research findings validate the hypothesis that tendering and project-timeline forecasting procedures at Power grid Bangladesh (Power grid) are characterized by structural and institutional issues that lead to project delays and project inefficiencies. The survey findings backed by the support of case study and literature review indicate a steady trend of unrealistic DPP scheduling, poor evaluation methods, low institutional capacity and external implementation constraints.

The analysis indicates that timeline errors are mostly caused by the fact that risk-adjusted planning is not implemented and that technical, procurement, and financial functions are not integrated. The reliance on the lowest-price (L1) evaluation means also decreases the quality of the projects and their timeline as underqualified contractors in many cases cannot find the necessary financial and human resources. Similarly, there are recurrent institutional bottlenecks, such as high staff turnover, skill shortage among employees, and lack of co-ordination between departments, which contribute to these delays.

The study also confirms that externalities such as land-acquisition wrangles, monsoon disruptions, shipment delays and donor or political pressure are often not considered during planning and lead to unrealistic project timelines and frequent project-DPP revisions. These results make it clear that the delays of the project in Power Grid are structural and not accidental and it needs both organizational and procedural reforms.

Section 5.5 has suggested a framework that has a way through these challenges. Power Grid can improve the precision of project scheduling and the success of tendering procedures through a risk-based forecasting model, a weighted

contractor-evaluation system, institutional and capacity-building reforms. Moreover, there must also be enhanced collaboration with funding bodies, stakeholder active management, and continuity of leadership to maintain the delivery of projects on time.

To sum up, the present study has shown that the enhancement of procurement and forecasting practices in Power Grid would necessitate a comprehensive change- an implementation of compliance-based processes into a performance-based management culture that is based on data. Realism in planning, greater technical and managerial qualifications, and institutionalizing transparent and value-based evaluation systems will be important measures in the process of ensuring efficient, responsible and timely execution of high-voltage infrastructure projects in Bangladesh.

Chapter 6: Conclusion and Recommendations

6.1 Introduction

This chapter summarizes the key results of the study and provides practical recommendations on how to enhance the effectiveness of tendering and the ability to predict the project-timeline in Power grid Bangladesh PLC (Power grid).

The research objectives were to determine the institutional, procedural, and external causes of delays in high-voltage substation and transmission-line projects as well as to create a framework of the improvement of procurement effectiveness.

The conclusions are made based on a mixed-method study, including stakeholder surveys, case-study evidences, and literature review.

6.2 Summary of Key Findings

The study demonstrates that the delays in the delivery of the projects by the Power Grid are not isolated incidents but rather systemic. The fundamental issues span through the whole project cycle, including planning and tendering, to execution and monitoring. The general findings included the following:

- **The reason is that where the project begins and where it finishes are not realistic:**

The cause is that the starting point and the finishing point of the project are not realistic. The results of surveys and case studies proved that Development Project Proforma (DPP) schedules tend to be too optimistic and are influenced by administrative or donor influence instead of realities on the ground. More than 60 percent of the respondents found the current schedules to be unrealistic, which resulted in the revisions and time extensions of DPP.

- **Overlooked Risk Factors:**

Some of the most important risks like land acquisition (86.5%), weather and seasonal constraints (67.6%), manufacturing and shipment delays and stakeholder interference in most cases are not adequately considered or not regarded in timeline forecasting leading to massive differences between actual and planned completion dates.

- **The Lowest-Price (L1) Evaluation System limitations:**

About 79 percent of the respondents considered the lowest-price method to be ineffective because of several cases when underpriced contractors have gone into a state of financial distress, mobilized late, and had poor quality.

- **Institutional and Capacity Gaps:**

Almost two-thirds of the respondents thought that the procurement officials at Power Grid were not trained on proper guidelines on procurement and project-management in the public-sector. The case studies also suggested that the bottlenecks are recurrent due to low expertise, high turnover of leadership, and poor inter-departmental coordination.

- **External and Financial Constraints:**

External factors especially, Right-of-Way disputes, delay in releasing funds, and political or donor influence were found to be significant factors in the delay in project completion. More than 80 percent of the respondents concurred that late financial payments have a direct impact on the cash flow and continuity of the work by the contractor.

These findings combined allow concluding that the tendering and project-management issues of Power Grid are institutional, procedural, and environmental in nature and need to be reformed as a whole instead of being adjusted in bits.

6.3 Conclusions

The paper finds that the fundamental causes of delay in Power Grid projects are due to a mismatch of the assumptions of the planning and the reality of operations. The unrealistic DPP schedules, lack of organized risk assessment, and overdependence of cost-based contractor selection all contribute to poor performance of projects.

As much as these problems are worsened by external factors like land disputes and donor procedures, the main vulnerability is in the internal institutional capacity; namely, inadequate professional training, inability to forecast using data and poor interdepartmental coordination.

The evidence shows that the transition to the performance-based procurement, supported by the risk-adjusted planning, would significantly enhance the cost and time performance. The implementation of the projects with the guidance of such development partners as ADB and IDB demonstrates that structured evaluation, proactive reporting, and strict risk management are more effective in schedule compliance compared to the old methods.

Thus, this dissertation confirms that the sustainability of the expansion of the transmission sector in Bangladesh lies in enhancing the institutional systems of Power Grid not only the investment or contractor involvement.

6.4 Policy Recommendations

To address the identified weaknesses, the following policy level and organizational suggestions are offered to make Power grid change the procurement and project-management systems to be performance-based rather than compliance-driven.

1. Identify a Risk-Based Forecasting Framework.
   - Add probabilistic scheduling tools (e.g., PERT, Monte Carlo simulation) to project`-planning templates.
   - Introduce design review, shipment logistics, monsoon seasons as well as Right-of-Way clearance risk-buffer requirements.
   - Demand cross-departmental certification of project timelines to be submitted before DP`P is submitted to make sure that it is viable.
2. Reform Contractor-Evaluation Practices.
   - Instead of single-criteria Lowest Evaluated Bidder (L1) should be replaced with a multi-criteria model of Weighted or Most Economically Advantageous Tender (MEAT) that balances price, technical competence, financial soundness, manpower and previous performance.
   - Test this system on donor-financed EPC projects, and gradually on all large-scale procurements.
   - Standardized scoring matrices and evaluator-training modules need to be developed so that it is transparent and fair.
3. Develop Institutional Strength and Leadership Stasis.
   - Increase the number of design engineers, procurement experts and contract managers by using specific recruitment and retention incentives.
   - Formalize frequent training and certification on PPA-PPR, ADB, IDB and World Bank procurement systems.
   - Ensure Leadership integrity through Project Directors on complete project cycle and delegation of decision making to speed up implementation.
4. Digitize Procurement and Project monitoring.
   - Develop a centralized Project-Management Information System (PMIS) that incorporates planning, procurement, finance and implementation data.
   - Implement online dashboards and automated milestones-monitoring systems in order to detect the delays early.
   - Connect PMIS and ERD and donor-agency platforms with the purpose of enhancing the coordination process and accelerating the release of funds.
5. Empower Financial and Stakeholder Co-ordination.

- Introduce milestone disbursement systems that are pegged on verified progress reports.
- Hold bi-monthly progress meetings with the financiers and contractors to clear the bottlenecks on time.
- Give a well-organized stakeholder-engagement strategy such as landowners, local authorities and community representatives to proactively address Right-of-Way and social concerns.

6. Make Knowledge Management and Risk Governance an institution.
   - Establish a Central Risk Register of all high-voltage and donor-funded projects, which contains technical, financial, and environmental risks.
   - Create a Procurement Knowledge Hub inside Power Grid where lessons learned, case studies, and best practices are stored to be used to enhance the continuous improvement.
   - Encourage data sharing, responsibility, and evidence-based decision-making within the various departments.

6.5 Expected Outcomes

The proposed measures will bring the following outcomes; in case they are implemented successfully:

- More realistic and evidence-based project schedules, with less DPP revisions and time extensions.
- Better performance of the contractors by conducting weighted evaluation and competency selection.
- Improved predictability in fund-flow and improved coordination with donor agencies.
- Improved institutional capacity by building on continuous training and knowledge retention.
- Evident decreases in the mean delay times of projects, which will result in the enhancement of grid stability and the increase in the efficiency of the public sector.

6.6 Final Reflection

The dissertation will help enhance the knowledge on institutional mechanisms that influence project schedules in the power-transmission sector in Bangladesh. It shows that with proper procurement reform based on data analytics, capacity development, and risk-driven planning; delivery of the public-infrastructure can be significantly improved.

The lessons learned within the context of Power Grid can be applied to other state-owned utilities that have to deal with similar issues. Finally, it is a managerial and policy requirement to transform the tendering and forecasting systems at Power grid. Following the suggested framework, the organization will be able to transform into a modern, responsible, and performance-based utility that can provide stable, high-voltage infrastructure within the necessary schedule and, thus, contribute to the long-term development of the power-sector in Bangladesh.

References

1. **ADB.** (2017). *Procurement Guidelines for Goods, Works and Consulting Services.* Asian Development Bank, Manila.
2. **ADB.** (2018). *Annual Evaluation Review of ADB-Financed Energy Projects.* Asian Development Bank, Manila.
3. **ADB.** (2021). *Bangladesh Power System Enhancement and Efficiency Improvement Project.* Asian Development Bank.
4. **ADB.** (2023). *Standard Bidding Document for Plant: Design, Supply and Installation (Single-Stage, Two-Envelope).* Asian Development Bank, Manila.
5. **AIIB.** (2022). *Energy Sector Strategy: Sustainable Energy for Asia.* Asian Infrastructure Investment Bank.
6. **BRAC University.** (2025). *MPSM Dissertation Guidelines.* BRAC Institute of Governance and Development (BIGD).
7. **CIGRÉ.** (2018). *Benchmarking of Power Transmission Project Procurement Practices (Technical Brochure 769).* Paris: CIGRÉ. (Referenced for weighted scoring practice)
8. **CPTU.** (2022). *Public Procurement Rules 2008 (as amended).* Central Procurement Technical Unit (IMED), Government of Bangladesh. (Cited as institutional source)
9. **Davis, P.** (2014). Contract strategy for projects: Beyond the lowest bidder approach. *Journal of Construction* Procurement, 19(1), 10–21.
10. **Development Project Proforma (DPP) Guidelines.** Planning Commission, Government of Bangladesh.
11. **FIDIC.** (2017). *Conditions of Contract for EPC/Turnkey Projects (Silver Book).* Fédération Internationale des Ingénieurs-Conseils, Geneva.
12. **Flyvbjerg, B., Holm, M. K. S., & Buhl, S. L.** (2002). Underestimating costs in public works projects: Error or lie? *Journal of the American Planning Association,* 68(3), 279–295. https://doi.org/10.1080/01944360208976273 (Cited p. 280 for probabilistic forecasting argument)
13. **Flyvbjerg, B., Bruzelius, N., & Rothengatter, W.** (2003). *Megaprojects and Risk: An Anatomy of Ambition.* Cambridge University Press. (Cited p. 45 for land acquisition and resettlement issues)
14. **IDB.** (2019). *Procurement Guidelines for Projects Financed by IDB.* Islamic Development Bank, Jeddah.
15. **JICA.** (2020). *Guidelines for Procurement under Japanese ODA Loans.* Japan International Cooperation Agency, Tokyo.
16. **Kerzner, H.** (2022). *Project Management: A Systems Approach to Planning, Scheduling, and Controlling (13th ed.).* John Wiley & Sons.
17. **KfW.** (2021). *Sustainability Guidelines for Financial Cooperation Projects.* Kreditanstalt für Wiederaufbau (German Development Bank), Frankfurt.
18. **Kwak, Y. H., & LaPlace, K. S.** (2005). Examining risk tolerance in project management. *Technovation,* 25(6), 691–695. (Used p. 692 for lowest-bidder limitations)
19. **OECD.** (2016). *Preventing Corruption in Public Procurement.* OECD Publishing, Paris. (Referenced for weighted evaluation models)
20. **PMI (Project Management Institute).** (2021). *A Guide to the Project Management Body of Knowledge (PMBOK®* Guide*), 7th Edition.* Project Management Institute, Newtown Square, PA.
21. **Power Grid Bangladesh PLC.** (2025). *Annual Report 2024–25.* Ministry of Power, Energy and Mineral Resources, Dhaka.
22. **Rahman, M. M., & Haque, M. S.** (2019). Public procurement and project implementation delays in Bangladesh power sector. *Journal of Public Administration and Policy Research,* 11(3), 25–34. (Cited p. 28 on contractor behavior)
23. **Thai, K. V.** (2001). Public procurement re-examined. *Journal of Public Procurement,* 1(1), 9–50. (Cited p. 10 for procurement principles)
24. **UNESCAP.** (2019). *Managing Infrastructure Project Risks in Asia and the Pacific.* United Nations Economic and Social Commission for Asia and the Pacific, Bangkok. (Cited p. 27 for risk management gap)
25. **World Bank.** (2017). *Procurement Regulations for IPF Borrowers (4th Edition).* World Bank, Washington D.C.
26. **World Bank.** (2019). *Implementation Completion Report on Bangladesh Power Sector Reform Program.* World Bank. (Referenced for DPP assumptions)
27. **World Bank.** (2020). *Bangladesh Energy Sector Diagnostic Report.* World Bank Group. (Cited p. 33 for landowner resistance and site-handover delays)
28. **World Bank.** (2022). *Bangladesh Power Sector Reform and Efficiency Report.* World Bank Group.
29. **Unpublished Project Documents (Internal PGCB) –––**
    Project Completion *Report (PCR).* Enhancement of Capacity of Grid Substation and Transmission Lines for Rural Electrification Project; Financed by IDA (Credit No. 5381-BD).
    Development Project Proforma (DPP). Enhancement of Capacity of Grid Substation and Transmission Lines for Rural Electrification Project.
    Development Project Proforma (DPP). Enhancement of Capacity of 400/230/132 kV Grid Network Development Project.

Appendices

Appendix A – Survey Questionnaire

Appendix B – Survey Response

Appendix A – Survey Questionnaire

Topics: "Optimizing Tendering Processes and Timeline Forecasting for High-Voltage Substation and Transmission Line Projects in Power Grid Bangladesh"

* Indicates required question

1. Your name

_____

2. Your Email address: *

_____

3. Q1. Your current role/position: *

Mark only one oval.

- ◯ Project Director
- ◯ Design Engineer
- ◯ Contractor's Representative
- ◯ Consultant
- ◯ Project Engineer
- ◯ Other: _____

4. Q 2. Years of experience in high-voltage substation and transmission projects: *

Mark only one oval.

- ◯ Less than 5 years
- ◯ 5–10 years
- ◯ 11–15 years
- ◯ More than 15 years

5. Q 3. Have you directly been involved in tendering or procurement planning for PGCB projects? *

Mark only one oval.

- ◯ Yes
- ◯ No

6. Q 4. In your opinion, how realistic are the project timelines set in the **DPP (Development Project Proposal) o**n a scale of 1–5.

Mark only one oval.

- ◯ 5 = Very realistic
- ◯ 4 = Somewhat realistic
- ◯ 3 = Neutral
- ◯ 2 = Somewhat unrealistic
- ◯ 1 = Very unrealistic

7. Q 5. Which of the following factors are most often **overlooked during timeline forecasting**? *(Select up to 3)*

Check all that apply.

- [ ] Land acquisition and resettlement issues
- [ ] Manufacturing lead times of equipment
- [ ] Shipment and customs delays
- [ ] Design/drawing approval time
- [ ] Seasonal/weather impacts (e.g., rainy season)
- [ ] Stakeholder and political pressures
- [ ] Shortage of skilled staff in PGCB
- [ ] Other: _____

8. Q 6. On a scale of 1–5, how much do you agree with this statement:
"Timelines in procurement planning are often influenced by political pressure or donor requirements, rather than technical realities."

Mark only one oval.

- ◯ 1 = Strongly disagree
- ◯ 2 = Disagree
- ◯ 3 = Neutral
- ◯ 4 = Agree
- ◯ 5 = Strongly agree

9. Q 7. What evaluation method is most commonly used in Power Grid's tenders you are familiar with?

Mark only one oval.

- ◯ Lowest responsive bidder (LRB)
- ◯ Weighted scoring (technical + financial)
- ◯ Quality and cost-based selection (QCBS)
- ◯ Other: _____

10. Q 8. In your opinion, how effective is the **lowest-bidder approach** in ensuring timely project delivery in a scale of 1 to 5 ?

Mark only one oval.

- ◯ 1 = Very effective
- ◯ 2 = Somewhat effective
- ◯ 3 = Neutral
- ◯ 4 = Somewhat ineffective
- ◯ 5 = Very ineffective

11. Q 9. Do you think PGCB should adopt a **weighted evaluation model** (considering contractor's financial stability, manpower, and experience, not only price)?

Mark only one oval.

- 1 = Strongly agree
- 2 = Agree
- 3 = Neutral
- 4 = Disagree
- 5 = Strongly disagree

12. Q 10. One of the most important factors affecting timeline setting during the project planning stage is the lack of proper knowledge of the Government Procurement process. Do you agree with this statement? Please rate on a scale of 1 to 5.

Mark only one oval.

- 5 = Strongly Agree
- 4 = Agree
- 3 = Neutral
- 2 = Disagree
- 1 = Strongly Disagree

13. Q 11. In your experience, what are the **top 3 causes of delay** in Power Grid projects? *(Select up to 4)*

Check all that apply.

- [ ] Delayed design approval by PGCB
- [ ] Contractor's weak financial capacity
- [ ] Manufacturing and shipment delays
- [ ] Land acquisition disputes
- [ ] Political and social resistance
- [ ] Multi-ministerial approval/vetting requirements
- [ ] Complaints/disputes during evaluation
- [ ] Lack of skilled project/procurement staff
- [ ] Other: _____

14. Q 12. On a scale of 1–5, how often do Power Grid projects require **DPP revision or extension** due to unrealistic Protect timeline planning?

Mark only one oval.

- ◯ 1 = Never
- ◯ 2 = Rarely
- ◯ 3 = Sometimes
- ◯ 4 = Often
- ◯ 5 = Almost always

15. Q 13. Do you believe Power Grid procurement staff receive adequate training in donor-funded procurement guidelines?

Mark only one oval.

- ◯ 5 = Yes, very adequate
- ◯ 4 = Somewhat adequate
- ◯ 3 = Neutral
- ◯ 2 = Inadequate
- ◯ 1 = Very inadequate

16. Q-14. In your opinion, which area of Power Grid needs the **most urgent improvement** to ensure timely project delivery? (select up to 3)

Check all that apply.

- ☐ Procurement planning and forecasting
- ☐ Tender evaluation methods
- ☐ Stakeholder management (landowners, local communities)
- ☐ Contractor selection and supervision
- ☐ Ministry-level approval/vetting procedures
- ☐ Staff training and capacity building

17. Q-15. What do you think is the main problem in Power Grid's project completion delays from planning timeline?

Mark only one oval.

- ◯ Lengthy approval process (ECNEC, vetting, financing delays)
- ◯ Lack of accurate project time forecasting
- ◯ Delays in procurement/tendering procedures
- ◯ Coordination issues among stakeholders (consultants, contractors, Power Grid)
- ◯ Frequent design/scope changes during execution
- ◯ Other: _____

18. Q-16. Power Grid generally procures about 90% or more of its items from abroad due to the unavailability of local manufacturers in Bangladesh. Knowledge of international import–export business and logistics procedures is an important factor in determining a realistic project completion timeline. Do you think the officials responsible for setting procurement timelines have sufficient knowledge of these two areas?

Mark only one oval.

- ◯ 5 = Sufficient
- ◯ 4 = Good enough
- ◯ 3 = Good
- ◯ 4 = Not enough
- ◯ 5 = Very Poor

19. Q-17. One of Power Grid's most challenging tasks is handing over the site to the EPC contractor. In particular, Right of Way (RoW) issues for high-voltage transmission lines are highly critical to completing projects on time. Do you think it is possible to consider all RoW-related challenges during project timeline forecasting?

Mark only one oval.

- ◯ 5 = Yes, Easily possible
- ◯ 4 = Somewhat possible
- ◯ 3 = Neutral
- ◯ 2 = Not, easily possible
- ◯ 1 = Impossible

20. Q-18. Most of Power Grid's turnkey projects are complex in nature, involving design, supply, and installation, and typically require more than one fiscal year to complete. Do you think the Procurement Plan outlined in the Development Project Proposal (DPP) or Annual Procurement Plan (APP) is strictly followed by the procurement staff?

Mark only one oval.

- ◯ 5 = Almost always
- ◯ 4 = Often
- ◯ Sometimes
- ◯ Rarerly
- ◯ Never

21. Q 19. Most of Power Grid's tenders are based on the EPC model. There are many unforeseen issues and uncertainties—especially in transmission line projects such as river-crossing foundations or foundations in riverbeds—that require highly skilled technical manpower. Do you think Power Grid has sufficient skilled manpower to anticipate such complexities during the planning stage to forecast an accurate project timeline?

Mark only one oval.

- ◯ 5 = Sufficient
- ◯ 4 = Good enough
- ◯ 3 = Good
- ◯ Not enough
- ◯ Very Poor

22. Q-20. Due to weaknesses in the evaluation methodology, comparatively less experienced contractors often receive awards, which may lead to project delays. Do you agree with this statement?

Mark only one oval.

- ◯ Almost always
- ◯ Often
- ◯ Sometimes
- ◯ Rarely
- ◯ Never

23. Q-21. Cash flow during construction is crucial for the successful completion of a project. Do you think delays in fund release from financing agencies (GoB or foreign banks) can cause delays in Power Grid's projects?

Mark only one oval.

- 1 = Almost always
- 2 = Often
- 3 = Sometimes
- 4 = Rarely
- 5 = Never

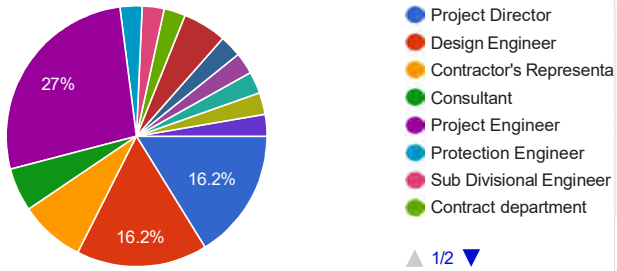
24. Q-22. What **specific reforms or changes** would you recommend to improve the accuracy of project timelines?

25. Q-23. In your view, how can PGCB balance the need for transparency (lowest price) with the need for quality and timely project delivery?

Appendix B – Survey Response

Q1. Your current role/position:

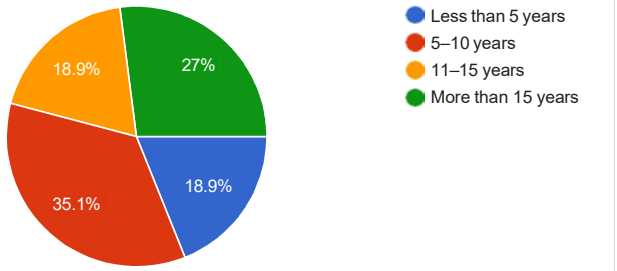
Copy



Q 2. Years of experience in high-voltage substation and transmission projects:

Copy

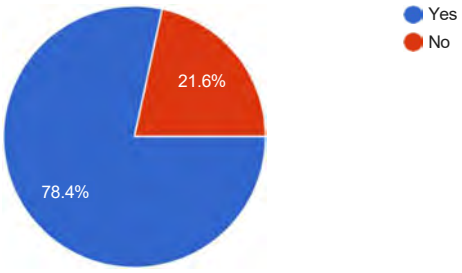
37 responses



Q 3. Have you directly been involved in tendering or procurement planning for PGCB projects?

Copy

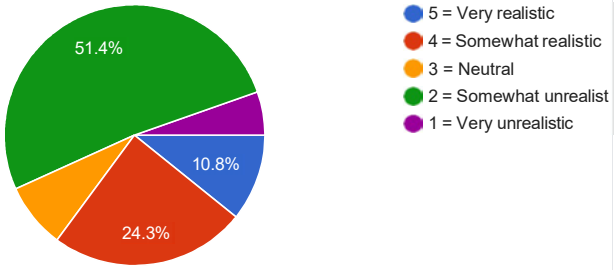
37 responses



Q 4. In your opinion, how realistic are the project timelines set in the DPP (Development Project Proposal) on a scale of 1–5.

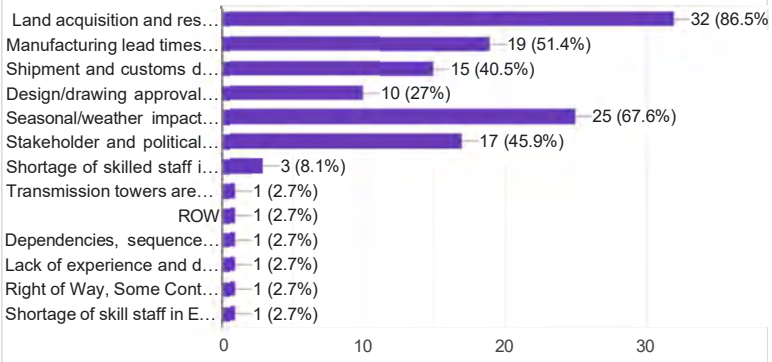
Copy

37 responses



Q 5. Which of the following factors are most often overlooked during timeline forecasting? *(Select up to 3)*

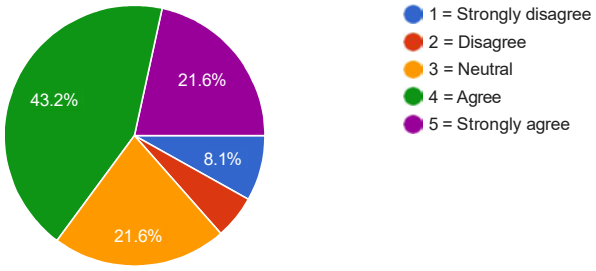
Copy



Q 6. On a scale of 1–5, how much do you agree with this statement:
"Timelines in procurement planning are often influenced by political pressure or donor requirements, rather than technical realities."

Copy

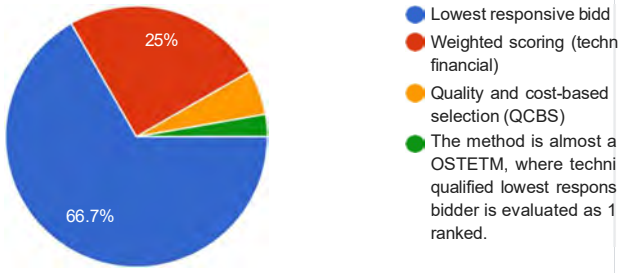
37 responses



Q 7. What evaluation method is most commonly used in Power Grid's tenders you are familiar with?

Copy

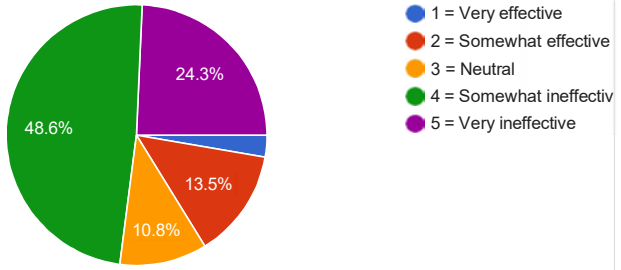
36 responses



Q 8. In your opinion, how effective is the lowest-bidder approach in ensuring timely project delivery in a scale of 1 to 5 ?

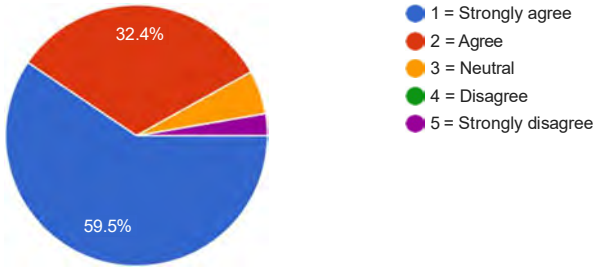
Copy

37 responses



Q 9. Do you think PGCB should adopt a weighted evaluation model (considering contractor's financial stability, manpower, and experience, not only price)?

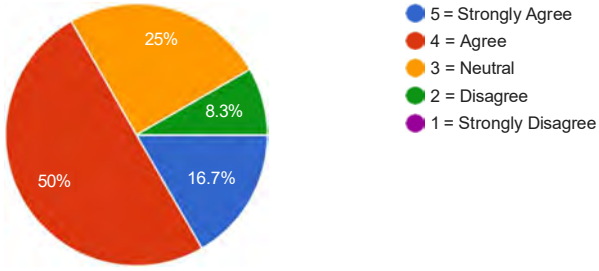
Copy



Q 10. One of the most important factors affecting timeline setting during the project planning stage is the lack of proper knowledge of the Government Procurement process. Do you agree with this statement? Please rate on a scale of 1 to 5.

Copy

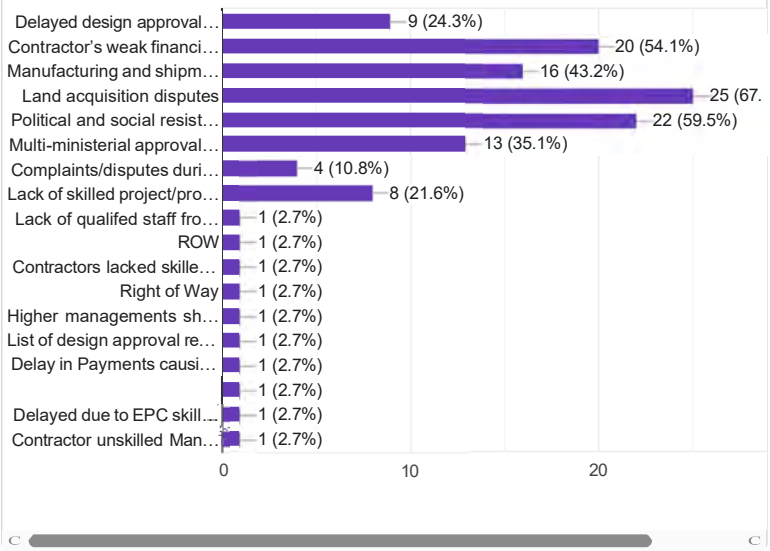
36 responses



Q 11. In your experience, what are the top 3 causes of delay in Power Grid projects? *(Select up to 4)*

Copy

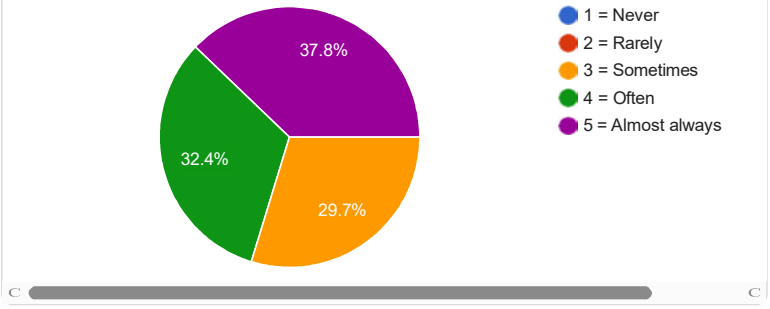
37 responses



Q 12. On a scale of 1–5, how often do Power Grid projects require DPP revision or extension due to unrealistic Protect timeline planning?

Copy

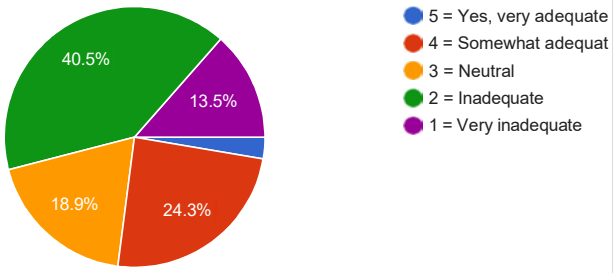
37 responses



Q 13. Do you believe Power Grid procurement staff receive adequate training in donor-funded procurement guidelines?

Copy

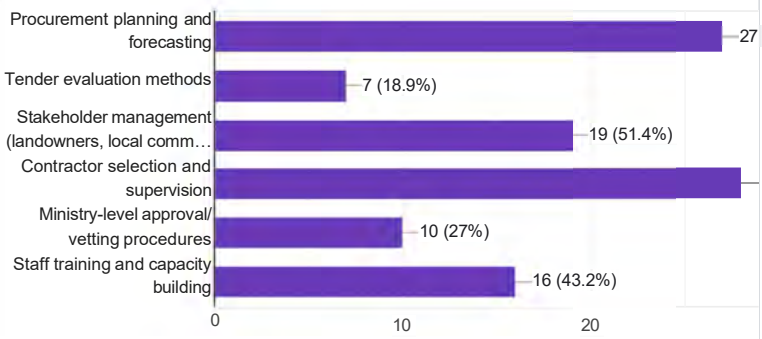
37 responses



Q-14. In your opinion, which area of Power Grid needs the most urgent improvement to ensure timely project delivery? (select up to 3)

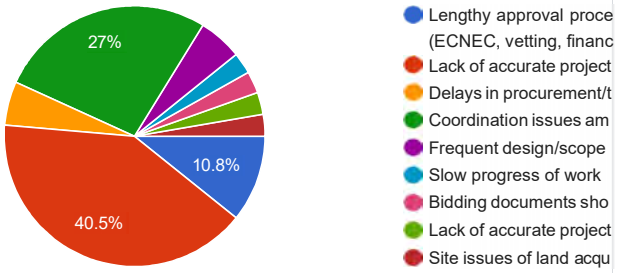
Copy

37 responses



Q-15. What do you think is the main problem in Power Grid's project completion delays from planning timeline?

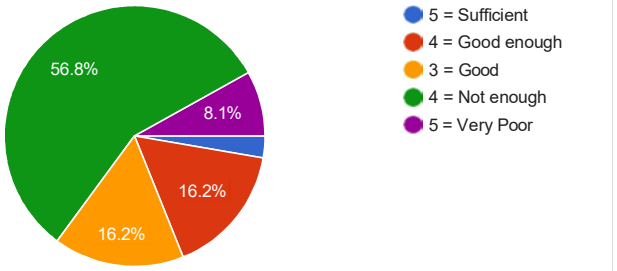
Copy



Q-16. Power Grid generally procures about 90% or more of its items from abroad due to the unavailability of local manufacturers in Bangladesh. Knowledge of international import–export business and logistics procedures is an important factor in determining a realistic project completion timeline. Do you think the officials responsible for setting procurement timelines have sufficient knowledge of these two areas?

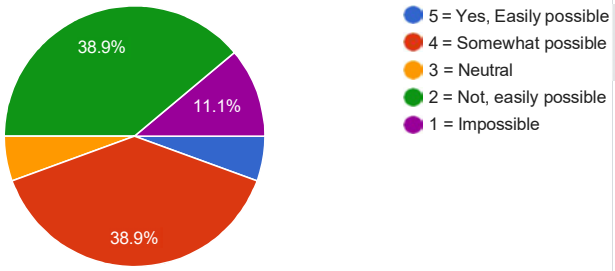
Copy

37 responses



Q-17. One of Power Grid's most challenging tasks is handing over the site to the EPC contractor. In particular, Right of Way (RoW) issues for high-voltage transmission lines are highly critical to completing projects on time. Do you think it is possible to consider all RoW-related challenges during project timeline forecasting?

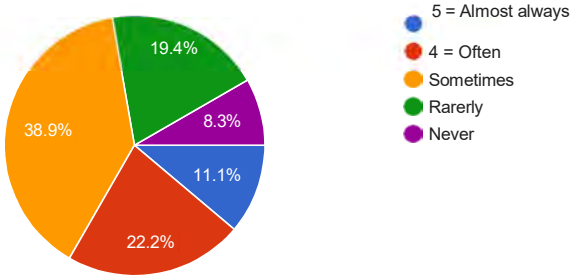
Copy



Q-18. Most of Power Grid's turnkey projects are complex in nature, involving design, supply, and installation, and typically require more than one fiscal year to complete. Do you think the Procurement Plan outlined in the Development Project Proposal (DPP) or Annual Procurement Plan (APP) is strictly followed by the procurement staff?

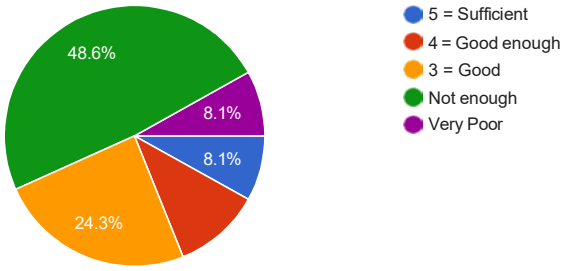
Copy

36 responses



Q 19. Most of Power Grid's tenders are based on the EPC model. There are many unforeseen issues and uncertainties—especially in transmission line projects such as river-crossing foundations or foundations in riverbeds—that require highly skilled technical manpower. Do you think Power Grid has sufficient skilled manpower to anticipate such complexities during the planning stage to forecast an accurate project timeline?

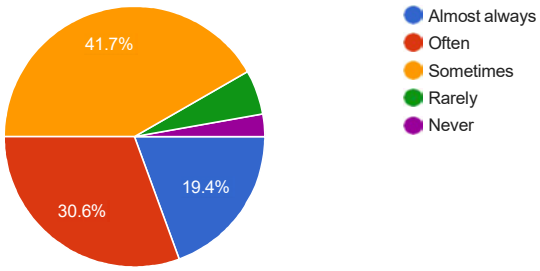
Copy



Q-20. Due to weaknesses in the evaluation methodology, comparatively less experienced contractors often receive awards, which may lead to project delays. Do you agree with this statement?

Copy

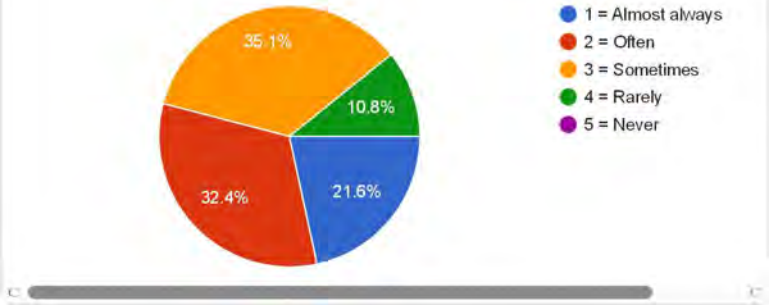
36 responses



Q-21. Cash flow during construction is crucial for the successful completion of a project. Do you think delays in fund release from financing agencies (GoB or foreign banks) can cause delays in Power Grid's projects?

Copy

37 responses



Q-22. What specific reforms or changes would you recommend to improve the accuracy of project timelines?

32 responses

Mainly Field Survey & Project Planning

(1) There should be a co-ordinating team from Power Grid end to co-ordinate funding related issues with ERD.

(2) Power Grid must employ dedicated internal committees/teams with members from across relevant technical departments for the specification preparation process. The current method of merely issueing a note/letter and assigning this job as regular tasks to design/technical teams undermines the importance of design-specification oreparation process. The more time spent om a accurate design-spec preparation is an investment, and greatly saves time that may arise out of complexities during execution.

Adapting realistic project completion timeline, quality and cost based evaluation to select potential contractor, autonomy of Project Director for making fast decisions during execution. Manufacturers selection is also very important. Delay in product delivery significantly hampering project timeline.

Proper planning considering all challenges

Responsible Planning personnel has to be more aware about probable issues at proposed sites or locations that may raise dusring execution

1. Improving the evaluation methods
2. Selecting a competent EPC contractor
3. Increasing manpower in project office
4. Proper compliance with contract requirement without relaxing any issues
5. Compelling EPC contractor to move forward with compliance with contract requirement
6. Failure of any contract requirement or breach of contract should be treated properly with imposing relevant contractual actions over the EPC
7. Utilizing proper manpower or skilled manpower of power grid to the specific field or office
8. Increasing R&D practices in power grid and applying those in new projects avoiding any types of prejudices

1. The PQ criteria need to be further strengthened.
2. If needed LD shall be applied not only completion but also main activi

Land aqusition before dpp approval

Each estimation should be done by the staffs who directly work on the specific jobs.
Rather estimating the time based on historical data, probable time of manufacturing should be collected from potential manufacturers.
Testing time- specifically when new design is under consideration- must be included in estimation.
Geographical location and stakeholders influence on a particular work must be taken into consideration.
Estimated timeline should be given validity and seasonal conditions (e.g. 500 days if the contract is effective on October).

Project time line should be realistic, bidding documents should be more specified, bid evaluation should be done more carefully and manpower for implementation should be selected carefully and proper training and motivation program.

More detailed survey and detailed engineering during tendering stage and considering some buffer of time for execution may make schedule more realistic the and QCBS concepts may help to identify the right contractor .

People with direct project execution experience should be involved in forecasting timeline

Side selection, Development Partner selection and properly project time assessment considering all factor.

Should select good EPC with good / trusted products for country's future betterment.

The force majeure and public holidays shall be considered in the planning of timeline.

There is a binding for DPP timeline as per the Government Order (পিরপক) which is 5 years maximum for a project.
But most of power grid projects are complex and wide area covering thus the timeline is a roadblock for proper planning.

To be more practical, timelines have to be calculated by using average actual completion time of previous 5 similar tasks/Projects.

We need to change procurement methods, we can separate the engineering part from turnkey tendering method.

The project scope must be reviewed critically for assessing the right time lines. All the LILO lines entry and exit points must be decided first hand and should not be left open at bidding stage .

Take care required in all stages

1.Capacity Building and Training
2.Evidence-Based Timeline Estimation
3. Early Involvement of Procurement Expert
4.Streamlining Approval and Review Processes
5.Accountability and Performance Monitoring
6.Coordination Between Stakeholders.

To improve the accuracy of project timelines, completion targets should be based on robust procurement planning and forecasting. Establishing a continuous improvement cycle that captures and applies lessons from previous projects will ensure more reliable scheduling and better project outcomes.

I suggested several key reforms to make project timelines more accurate and realistic given below:

1. Work Breakdown Structures (WBS) to define every task clearly.

2. Apply historical data and past project performance for realistic estimates.

3. Add contingency time for risk and uncertainty.(Include buffer time)

4. Implement Earned Value Management (EVM) to measure progress accurately.

5. Track key metrics like Schedule Performance Index (SPI) and Cost Performance Index (CPI).

6. Apply Three-Point Estimation (Optimistic, Pessimistic, Most Likely) to get more realistic time predictions.

7. Use expert judgment and cross-functional reviews before finalizing the schedule.

8. Adopt parametric estimation (using productivity rates or unit rates) whre

possible.

9. Improved Resource Planning.

10. Improve Forecasting and Predictive Analytics.

After approval of DPP, avoiding any ministerial approval.

Details forecasting require.

1. To separate Supply and Service items in Local Tenders (all cases) and Foreign tenders (if possible)
2. To utlize previous Project Experience for all Tenders
3. To practice PMP Guidelines for all Projects

Better and more accurate planning during project planning stage by assessing practical site situations physically by those involved in planning, specially from planning & design departments in order to avoid changes during project execution stage.

Weighted scoring (technical + financial) tender may fallow.

During evaluation it should be considered the previous work/reputation of contractor.

PGB have to take urgent policies if any land owners or stakeholders prevents project execution work at urban/ town area in any from,then GoB has to pass a common order to REB,DPDC,NESCO etc that they will cutting off respective electricity/gas/water connections because of not abide by electricity act or order having paid compensation according to GoB order. Then nobody willfully resists project execution work.

1. During tender evaluation, higher weight should be given to the technical part rather than the financial part. Even if the price is slightly higher, technically competent companies with experienced manpower should be prioritized. A clear evaluation system for manpower capability should be included, as many EPC contractors depend on only a few skilled persons, which causes project delays.

2. If the EPC company uses subcontractors, they must have skilled manpower, strong cash flow, and proven experience in similar projects.

Without these, project quality and timeline will

3.Design approval should be done in such a way that multiple revisions are not required. All necessary changes should be identified in one go, and after submission, a physical meeting should be arranged to resolve all issues at

4. During FAT, sufficient technical personnel and adequate time must be ensured so that most technical issues are solved at the factory. The same

5. Project files often get delayed at the Ministry level. Legal and proper measures should be taken to reduce this delay. If necessary, the Power Minister or State Minister should be informed about the reasons for

6. Land acquisition is one of the most time-consuming parts of our projects.
PGCB should form a dedicated and skilled land acquisition team to assist

7. As most project materials come from abroad, customs clearance causes
significant delays. A PGCB support team can help contractors handle

8. PGCB project staff are not permanent, and officers are often taken from their regular posts. This creates manpower shortages and increases workload. A rotational project team system should be developed—e.g., Project Team-1, Team-2, etc.—so that after completing one project, they can

9. Proper training programs should be arranged for PGCB officers and staff involved in projects. This will improve efficiency and help them understand how to complete projects effectively and within schedule.

Need to handle EPC property from Top to bottom management.

Q-23. In your view, how can PGCB balance the need for transparency (lowest price) with the need for quality and timely project delivery?

33 responses

Deputed Trained expert & honest personel in every stsges of Project.

Well, a lot depends on the funding process. Since, large projects taken up by Power Grid are often funded by development partners, their terms oftem dictate the procurement method, and may impose constraints on Power Grid to imolement method that limit competition. Loans from multilateral organisations with should be encouraged for open competition. Any financial term with limited competition must be avoided. If the tender process is open, then OSTETM will automatically take care of the technical and Financial qualification of bidders.

Tender Evaluation should be based on quality and cost. Lowest price cannot be able to ensure quality. During contractor selection past history of the contractor should be taken into account. In my opinion, lowest price is not the solution. Balancing between cost and quality to select highly performing contractor is essential for timely project delivery.

Experienced and learned evaluator QCBS

Power grid can balance the need for transparency (lowest price) with the need for quality and timely project delivery by adopting a weighted evaluation model (considering contractor's financial stability, manpower, and experience, not only price).
During evaluation, technical evaluation should be strictly maintained following all contractual requirements stated in all volumes of tender especially requirements stated in technical specifications.
During execution, Power Grid must ensure all the requirements stated in contract including manpower requirements from EPC side.

Quality should be prioritized when reviewing projects. If quality-related issues, such as equipment failure, arise, standards such as bidding restrictions should be established.

By strong supervision during execution.

PGCB can build their own mathematical model considering all criteria quoted value, technical capability, financial strength, previous experience etc.

This model should be varied for different types of projects, like construction of a GIS substation and an AIS substation might get different weightage for bid price & technical capability.
Another example of this can be - construction of river crossing lines should have more weightage on experience that bid value.
Finally, in pre-bid meetings, PGCB should encourage the bidders to submit their departure schedules as soon as they receive the bid. Based on that, PGCB will have the chance to amend the bid documents.

Like as 22.

Open book marking system . Raw materials and components if PGCB can fixed like Japanese/ Singapore utilities now if based on same materials if vendor 1 quoted from Japan , vendor 2 from China or India , Europe : load each vendor with labour index . Since raw component are same . Example for transformer : steel , CU, bushing , tap , relays , insulations papers all materials and COO must be fixed by PGCB along with with loss

If we follow PPR fully, we can never achieve this goal. PPR should be amended. PGCB should take bold decision of banning some of the problematic contractors.

Achieving the following qualifications to deliver the project in time
1. **Managerial skill**
2. **Proper technical knowledge**
3. **Understanding the procurement sciences**
4. **Disputes management and fantastic communication skills**
5. **Coordination ability and having strong mentality**
6. **Honestly and dedication**
6. **Project management skilled with financial knowledge Tenderer**

Eligibility criteria set according to the nature of project.

Pgcb can review the previous results of the works in Bangladesh as well as other 1st world countries not own country of the contractor. Have to calculate their weighted score in engineering, previous completion record, right / trusted product , have to check the bidding documents are manipulated or not. By checking and completing all the processes, pgcb can choose right contractor for their project completion on time.

flexible and reasonable policy shall be applied during the project implementation to ensure the quality and timely project delivery.

There shall be a historical background check for every contractors if any contractors has bad record then they shall be Disqualified immediately.
The Manufacturing capacity of the manufacturer listed shall be checked and verified.
Official turnover shall also be checked and verified.

1. A list of vendors (more than five alternatives) of construction materials, finishing items (Cement, rebar, paints, clay claddings, Air-conditioners, Fan, light etc.) can be published in the website of Power Grid for every concerns.
2. There may have a ratio between payment of supply progress and payment of physical progress. This may helps to make a pressure to the contractor to complete the physical work faster so that he can receive full payment against supply of materials/equipment.
3. As per project setup, full or minimum 80% manpower shall have to be deployed for quality assurance.
4. There are a lot of impractical procedural conditions mentioned in the Electricity Rules of the country which is inconvenient to have ROW easily and in some extent opposes to early commence the work. These should be clarified by the competent authority/ministry to give sufficient safeguard to the licence.

During bid evaluation, all competencies should be carefully evaluated, after selection of the lowest bidder a presentation will be given by that bidder explaining condition of all resources and competency, power Grid higher officials will ask various types of questions to the bidder and bidder must satisfy Power Grid. After that mandatory site and office visit need to be performed by power Grid official to make sure that bidder have enough resources to complete the project in time. During the project performance, change management need to be controlled very strictly, and need to be confirmed that all human resources mentioned in the contract is available at site. Minimum amount of submitted bill should not be less than 70% of advance amount given to the bidder. Time schedule must be approved by power Grid and must be followed strictly. Project director (power Grid official) and project manager (bidder official) must have academic certification on project management and must be able to operate suitable project management related software.

Depending on project criticality and complexity , the procurement methodology can be choosen. Sometimes weighted scoring method can be exercised ,

May be transparency maintain is possible with the low cost but Quality is Money. It not possible to maintain best quality and project completion time with low cost.

1. Adopt a “Most Economically Advantageous Tender” (MEAT) Approach
2.Strengthen Prequalification and Vendor Evaluation
3. Implement Quality-Based Procurement for Critical Item
4. Enforce Performance Guarantees and Penalties
5. Promote Transparency through Digital Platforms
6.Encourage Early Contractor Involvement
7.Build Internal Technical Review Capacity

PGCB can balance transparency with quality and timely project delivery by introducing a weighted evaluation system in its procurement process. Instead of relying solely on the lowest price, bids should be assessed using a balanced scorecard that considers price, technical capability, past performance and delivery schedule.

Balancing transparency and low-cost procurement with quality and timely project delivery requires PowerGrid to adopt a structured, multi-dimensional approach. While transparent tendering and e-GP systems ensure competitive pricing and accountability, an exclusive focus on lowest cost can compromise material quality, contractor performance, and project timelines. Therefore, integrating weighted evaluation criteria that combine technical capability, past performance, and financial bid allows informed decision-making that values long-term reliability over short-term savings. Performance-based contracts, milestone-linked payments, and rigorous third-party quality inspections create incentives for timely and high-quality delivery, while real-time monitoring and data-driven progress analysis enable early detection of delays or substandard work. By strengthening internal planning and risk assessment capabilities and fostering ethical, accountable practices, PowerGrid can systematically reconcile the tension between cost efficiency, transparency, and project excellence, ensuring sustainable value for both the organization and the national grid.

1. Realistic DPP time.
2. Avoiding ministerial approval in execution time.

Manufacturing county name io Goods, must be mentioned un specification.

PGCB can follow most suitable examples set by other countries (except INDIA and CHINA)

Weighted evaluation method similar to guideline of new PPR 2025 should be introduced.

Weighted scoring (technical + financial) tender may apply to timely project delivery and need separately delayed calculation and imposed LD for each extension application

By considering previous project what was their actual performance level.

EPC past work experience regarding time line & work quality certification from at least 3 different end users.

1. **More marks should be allocated to the technical part during tender evaluation to ensure selection based on quality, not just the lowest price.**

2. **Increase the warranty or guarantee period so that contractors are responsible for replacing defective products even after installation.**

3. **Adequate Spare Parts:**
At least 20% additional spare parts should be included to allow quick replacement and maintain uninterrupted operation.

4. **Strict FAT (Factory Acceptance Test):**
Each piece of equipment must undergo proper FAT. Adequate time should be allowed, and responsible officials must be held accountable if defects are later found.
Emphasis should be placed on detailed specifications and testing to ensure quality, even if costs are slightly higher.

5. **Quality Over Quantity:**
If needed, build 9 substations instead of 10 — but never compromise on quality.It's better to take less, but take the best because compromising quality today means trouble tomorrow.

PGCB need Proper administrative support from field level specially to construct the transmission line and need to proper management to handle EPC