Scope and Challenges of Introducing Sustainable Procurement in Power Grid Company of Bangladesh Ltd. (PGCB Ltd.)

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পাওয়ার গ্রীড কোম্পানী অব বাংলাদেশ লিঃ
POWER GRID COMPANY OF BANGLADESH LTD.
(An Enterprise of Bangladesh Power Development Board)

Dissertation Report
On-

Scope and Challenges of Introducing Sustainable Procurement in Power Grid Company of Bangladesh Ltd. (PGCB Ltd.)

(A Dissertation Report Presented for Partial Fulfillment of the Requirement for the Degree of Masters in Procurement and Supply Management)

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BRAC University

Date of Submission: 4th December, 2016

LETTER OF TRANSMITTAL

4th December, 2016

Md. Mosta Gausul Hoque
Director (Planning and Development)
Parliament Secretariat
Bangladesh

Subject: Letter of Transmittal

Dear Sir,

It is my great pleasure to submit the dissertation report on "Scope and Challenges of Introducing Sustainable procurement in Power Grid Company of Bangladesh Ltd. (PGCB Ltd.)" **-**which have been prepared by me as a partial fulfillment of the Masters in Procurement and Supply Management.

The report has been prepared in accordance with proper guidelines and with the help of related materials, documents, observing the practices adopted by PGCB Ltd. Suitable methods were followed to gather data and analyze those data.

Within the time limit, best effort has been given so far to make the report comprehensive and errorless as far as possible.

Finally, I would like to pay gratitude to you for your kind and effective guidance and for that the report and related works have helped me to enhance my knowledge, experience and skills in sustainable procurement issues which will be invaluable for future projects.

Sincerely yours,

……

Sadat Bin Ashraf
Student ID No: 16382018
MPSM, Batch#12, 2016

CERTIFICATE

This is to certify that Sadat Bin Ashraf, MPSM Batch # 12, student ID No.16382018, has prepared the dissertation entitled "**Scope and Challenges of Introducing Sustainable Procurement in Power Grid Company of Bangladesh Ltd. (PGCB Ltd.)**" under my supervision. I do hereby approve the style and content of this thesis.

I also certify that I have gone through the draft and final version of the dissertation and found it satisfactory for submission to the BRAC Institute of Governance and Development, BRAC University for the partial fulfillment of the requirement for the degree of Masters in Procurement and Supply Management (MPSM).

Date: 4th December, 2016

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DECLARATION

I, Sadat Bin Ashraf, the student of Masters in Procurement and Supply Management (MPSM), under BRAC University, hereby declare that this dissertation report on the topic of " Scope and Challenges of Introducing Sustainable procurement in Power Grid Company of Bangladesh Ltd. (PGCB Ltd.)" have only been prepared for the fulfillment of the course of Masters in Procurement and Supply Management (MPSM).

I hereby declare that this report has been solely prepared by me and to the best of my knowledge. It contains no materials previously published or written by any other person which have been accepted for the degree at BRAC University or any other educational institution, except the quotations and reference which have been duly acknowledged.

It has not been prepared for any other purpose, reward, or presentation.

……

Sadat Bin Ashraf

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ACKNOWLEDGEMENT

The author would like to pay his heartiest gratitude and gratefulness to **Md. Mosta Gausul Hoque,** Director (Planning and Development), Parliament Secretariat, whose effective guidelines paved the way of completeness of this work. He provided invaluable suggestions from time to time in spite of his intense busy schedules.

It is also worth mentioning that, Engr. Sahbun Nur, Executive Engineer, System Planning and Engr. Noor Jamal, Executive Engineer, Substation Design and Quality control, have helped enormously with important guidance and documents, though having extreme load of office works. The author would like to wish the best regards for them.

Finally, the author is also indebted to all of his colleagues of the Design & Quality Control department of PGCB Ltd., who extended their wholehearted cooperation to the author, despite their heavy workload during the practical orientation.

EXECUTIVE SUMMARY

Sustainable purchasing is a growing global trend. Increasingly businesses, governments, non-profits and other organizations are integrating social and environmental objectives into the purchasing process as a means to reduce their environmental footprint, leverage social benefits and foster a sustainable economy.

The world is becoming more and more concerned about sustainability. As Bangladesh is a third-world developing country, sustainability is a major issue here. Bangladesh is one of the countries which are affected by climate changes most. Also environmental impact of any project is acute in this densely populated country. Poor working conditions and poorly treated labors (workers) are big questions.

This paper is an exploratory study and assessment of existing procurement practices and policies adopted by the PGCB Ltd. and evaluation of those procedures in the line of sustainability guidelines and procedures of government and international agreements. To further overcome the challenges, some relevant recommendations have been given here.

The report quantifies the impacts on environment and society of PGCB's purchasing by generating a survey report attached to it. This focuses on the 'Triple Bottom Line' (TBL) issues of sustainable procurement. It pin points economic viability, environmental sustainability, social sustainability and ethical sourcing practices of PGCB. It looks at the emerging role of government, donor agencies and international policies in driving the sustainable purchasing agenda and assesses recent trends and practices in sustainable purchasing.

Major conclusions are that, there is an emerging trend in PGCB towards organizations developing sustainability in purchasing programs. The challenges of contract performance monitoring and contract management need to be overcome to make the sustainable procurement successful in reality. Accordingly some plans & methods of driving sustainable culture development have been recommended herewith.

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Chapter-1: Introduction

1.1: A Short Background of the Study

In today's world, sustainability matters. Its importance and viability is beyond any doubt. Future generation is not safe without ensuring sustainability in our every activity. Enormous researches and works are being taken to address those issues and solve the problems arising from our activities.

As in any other countries of the world, Bangladesh is also emphasizing much on sustainability issues now a days. In each sector of its development projects, sustainability is of a much burning issue. But, this practice has been updated very recently. Day by day, it will further emphasize on this to cope up the most modern practices.

PGCB is only the organization in the country which is engaged in electricity transmission over the whole country. It also undertakes huge projects each year. International bidders participate and contractors are selected to run those projects. High voltage transmission system is a vital infrastructure of the country. Also donors and other organizations are concern about the sustainability issues of these development works.

Not only because of the scrutiny of others, but also for the welfare of ourselves, sustainability is generating much awareness among us. Government of Bangladesh has established 'Department of Environment (DoP)[1] to supervise the environmental and social impacts of any development project. Without the approval letter (Environmental Clearance Certificate) of DoP, no project gets approval to be executed. Prior to getting approval of projects, the following assessments are to be undertaken[2]:

- IEE (Initial Environmental Examination)
- EIA (Environmental Impact Assessment)
- SIA (Social Impact Assessment)
- RAP (Resettlement Action Plan)

Third-party consultants are employed to survey and generate those reports. This assessment is done following the government rules and procedures. The output of the

[1] DoE=Department of Environment, under Ministry of Environment and Forests
[2] Environmental Protection Rules, 1997

report is compared with the international guidelines and parameters. Also GoB[3] has formulated exclusive 'Environmental Act'[4] to be followed.

For economic viability of any project, IRR (Internal rate of return), NPV (net positive value) and others financial parameters are measured. Then the projects of the large investments are to be approved by ECNEC[5] before being executed.

This is clear that, social, environmental and economic viability and sustainability are to be ensured before approval of a project. PGCB also follows those procedures. Its activity cuts across all those sustainability concerns. So this study is a further step to address some of those sustainability issues in PGCB.

[Details of sustainability concept are described in chapter-3; details of recent works' review and literature review are described in chapter-4]

[3] GoB=Government of Bangladesh
[4] Website of DoE
[5] ECNEC=Executive Committee of the national economic council, a wing of planning commission

1.2: Statement of the Problem (Scope of the Study)

As an infrastructure development partner of Bangladesh Government, PGCB is also concern about sustainability. Majorly, it is trying to ensure the value for money (VFM) by efficient and effective use of public money. The social and environmental impact of its activities should be also a core focus. The procedures it follows for procuring and implementing the large projects in the light of sustainability need to be much more streamlined. Those procurement policies and processes are scrutinized and evaluated in this dissertation.

Procedures, regulations and policies are of two categories:

> **First is,** the government regulations, acts and rules; such as, Environmental Preservation Act and rules[6] and other policies dictated DoE (Department of Environment) under Ministry of Environment and Forests of Bangladesh.
>
> **Second is,** the international laws and regulations like EMS (Environmental Management System), ILO declarations (International Labor Laws) and so on.

Government of Bangladesh has a mandate of her own to preserve the social and environmental sustainability and achieve VFM. Also, many other development partners and donor organizations focus and emphasize on sustainability and try to scrutinize our policy and process of procurement (projects) to ensure the incorporation of sustainable policies therewith. As for example in case of PGCB, in the projects under the fund donated by World Bank (WB), a dedicated section on "Environment Management" has been prepared by the third-party employed by World Bank and that section is to be incorporated in the tender document, in the volume of "Employers Requirement".[7]

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[6] Website of DoE

[7] BIDDING DOCUMENT for "Design, supply, installation, testing and commissioning of 132/33kV Substations at Nawabganj, Srinagar, Narail, Jhenaidaha and Magura" Under "Enhancement of Capacity of Grid Substations and Transmission Lines for Rural Electrification under Rural Electricity Transmission and Distribution (T&D) Project of the World Bank." IDA Credit: 5381-BD, ICB No.: PGCB/W-04, (Bid Identification No.: PGCB/WB/ ECGSTL/SS/W04)

This paper aims to reveal the present status of sustainable practices in PGCB Ltd. And also it is also further needed to find out the challenges, barriers and pitfalls in the application of sustainable procurement policies, with some relevant recommendations for future development.

However, still now, not a notable study has been executed regarding sustainable procurement policies in PGCB Ltd. So considering the volume and importance of the projects adopted by PGCB and their impact, the views and objectives of this research work will go a long way and do a great deal to build up sustainability in the organization and in the country. This work will also be a milestone for others also.

[Details of issues and problems regarding sustainable procurement in PGCB are described in chapter-5]

1.3: Aims and Objectives of the Study

1.3.1 Aims of the Study

The aim of sustainable development is to define viable schemes combining the economic, social, and environmental aspects of human activity. These three areas must therefore be taken into consideration by communities, companies, and individuals. The ultimate goal of sustainable development is to find a coherent and long-lasting balance between these three aspects. In addition to these three main factors, there is a transverse consideration, which is essential to the implementation of policies and actions with regard to sustainable development: good governance.

The aim of this study is to enhance the position of PGCB in respect of sustainable development. Sustainable procurement is a vital aspect of sustainable development. This needs to address the importance, issues, scope and challenges of sustainable procurement in PGCB. The secondary aim of this study is to help in implementing the policies and procedures and improving good governance.

1.3.2 Objectives of this study

In order to reach the above mentioned aim, this study attempts to collect data and analyze those data in three specific areas of sustainability; economic viability, environmental and social aspects of sustainable procurement.

Here, we shall pinpoint three different aspects regarding those three areas of sustainable procurement. Related data will be collected and analyzed to reach coherent decision. It will take attempt to justify the extent to which the procurement system of PGCB is economically viable, environmentally and socially (CSR) sustainable.

1.4: Methodology of the Study

Both primary data and secondary data have been collected and analyzed in order to make this report. Care has been taken so that any variables cannot affect the objective of this study. Various types of primary and secondary sources have been used to collect necessary data.

1.4.1 Procedures of Data Collection

Primary data sources:

- Personal work experience in PGCB for last 4 years
- Practical work with RFP[8], Biddings, Tendering, IFQ[9], etc.
- Group discussion
- Face to face conversation and verbal communication with colleagues, contractors, suppliers and other stakeholders
- Interviewing with various stakeholders with open discussion and some structured questions-
    - Face-to-face interview
    - Interview over telephone
    - Communication via e-mail

Secondary data source:

- Corporate Website of PGCB
- International tender documents
- International policy guidelines for sustainable procurement

The obtained data are evaluated in comparing with the internationally recognized sustainable guidelines.

[8] RFP=Request for proposal
[9] IFQ=Invitation for Quotation

1.4.2 Sampling Method

Simple Random Sampling method was used and samples are chosen in such a way that all types of relevant stakeholders are covered. The issue of sustainability is a broad area that affects most. The samples are designed as below:

Table-1: Sample Frame

Name of Sampling Field	Design & QC Dept. of PGCB	System Planning & Project Planning Dept. of PGCB	Projects Dept. of PGCB	Grid & System Operation of PGCB	Suppliers' representatives	General People (Consumers)
Related Jobs/roles	Preparing Specification and tenders	Project Planning, project approval, feasibility study	Execution and supervision of Projects	Operation and Maintenance of grid network	Turn-key Contractors and Project Partners	Affected by infrastructure
Size of Samples	6	6	6	6	6	6

1.5: Research Question Variables

The concept of sustainability is not yet too much implemented and cultured issue in Bangladesh. But hopefully as soon as its familiarity will grow, this concept will be popular also.

So for this moment, though it is little bit difficult to seek responds (reply) from them with a set of predetermined (pre-set) questionnaires, some questions are raised to seek responses. The respondents are communicated and discussed face-to-face, while some are communicated over mobile phone and via e-mail (electronic mail).

They are discussed with the 'sustainability' term and its aspects. Then some specific issues are raised to them for their kind and well-thought opinion. Also some respondents were able to place some arguments on behalf of their opinion, which will be placed in detail in chapter-5. The questionnaires are raised and surveyed in such a way that those answers could help to reach the solution of the specific research questions.

However, the sustainability procurement issues of PGCB have been considered in a broader view and the core issues of sustainable procurement are addressed in the research questions. The questionnaire and survey are conducted to reach the answers of these research questions. The research question variables are as follows:

1. Are the globally adopted sustainable procurement practices & guidelines applicable for the procurement processes of PGCB Ltd.?
2. To what extent the existing procurement practices and policies of PGCB Ltd. are sustainable in the context of sustainable bottom lines (Triple Bottom Lines, TBL)?

1.6: Limitations

There were some limitations. Limitations faced were of two types:

1. Technical/ Process related
2. Conceptual

Technical limitations are as follows:

- Time constraints. Sustainability is a vast problem to address within a limited time period of two months only.
- Cost constraints. There is a cost involvement in arranging any seminar or presentation. A good seminar, which could be held otherwise, would have helped much.
- Interviewing with some key persons was difficult and not possible to arrange.
- PGCB's website was not updated regularly. Moreover, there is little information regarding this in that website.
- No notable study about sustainable procurement in power sector of Bangladesh was made before. So there was lack of previous data.
- Workload of the employees during the interview at work place was a barrier to get complete information to prepare this report.
- There were some response errors. Some of the employees could not understand the terms and questions clearly and were biased by other's opinion.

Conceptual Limitations are as follows:

- For the lack of any previous study, it has been difficult to gather any related data for sustainability in power sector in Bangladesh.
- For the lack of previous data and study, any strong concept has not grown yet in this regard in Bangladesh. So there is lack of concept regarding this issue among the stakeholders PGCB.
- The ideas of sustainability issues, which are vital in the present and may be vital in the future, are not clear in the top management and employees of PGCB.

Chapter-2:

Overview of the Procurement Function of PGCB

2.1: A Brief History of PGCB

Power Grid Company of Bangladesh Ltd. (PGCB) was formed under the restructuring process of Power Sector in Bangladesh with the objective of bringing about commercial environment including increase in efficiency, establishment of accountability and dynamism in accomplishing its objectives. PGCB was incorporated in November 1996 with an authorized capital of Tk.10 billion. It generates revenue from the fixed wheeling charge for transmitting the electricity.

It was entrusted with the responsibility to own the national power grid to operate and expand the same with efficiency. Pursuant to Government decision to transfer transmission assets to PGCB from Bangladesh Power Development Board (BPDB) and Dhaka Electric Supply Authority (DESA), PGCB completed taking over of all the transmission assets on 31.12.2002. PGCB expanded its network and capacity many fold and operating those efficiently and effectively.

It is only the organization operating and maintaining the whole grid of the Bangladesh, playing an important role in the Government's national development mission and vision. PGCB keeps mission rolling towards efficient and effective management of national power grid for reliable and quality transmission as well as expanding its capacity for economic dispatch of electricity throughout the country. It visions towards economic upliftment of the country by reaching electricity to all through reliable transmission.

Prime objectives of PGCB is to plan, promote, develop, operate and maintain an integrated and efficient power transmission system network in all its aspects including planning, investigation, research, design and engineering, preparation of preliminary feasibility and detailed project reports, construction operation and maintenance of transmission lines, substations, Load Dispatch Centers (LDC) and communication facilities and appurtenant works, co-ordination of integrated operation of regional, national and international grid systems, providing consultancy services in power systems field, execution of turnkey jobs for other utilities /organisation, wheeling of power, purchase and sale of power.[10]

[10] PGCB's Website

PGCB maintains & operates the high voltage transmission lines and substations all over the country. Some pictures of such substations are like below:

Figure-1.a: Comilla North 132kV substation

Figure-1.b: Maniknagar-Siddhirganj 230kV transmission line

The national grid network of 400kV, 230kV and 132kB Transmission Line and GEO maps are shown below:

Figure-2.a: National Grid Network

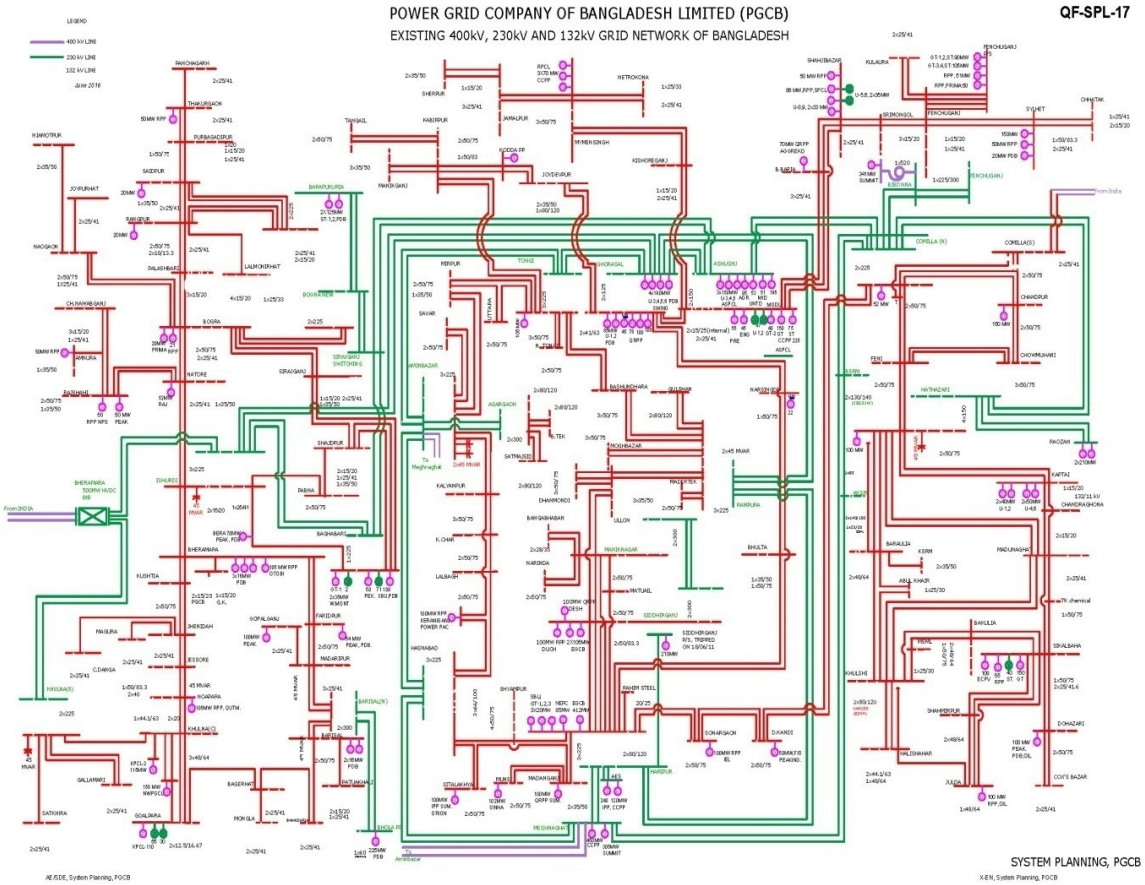


Figure-2.b: GEO map of national Grid Network

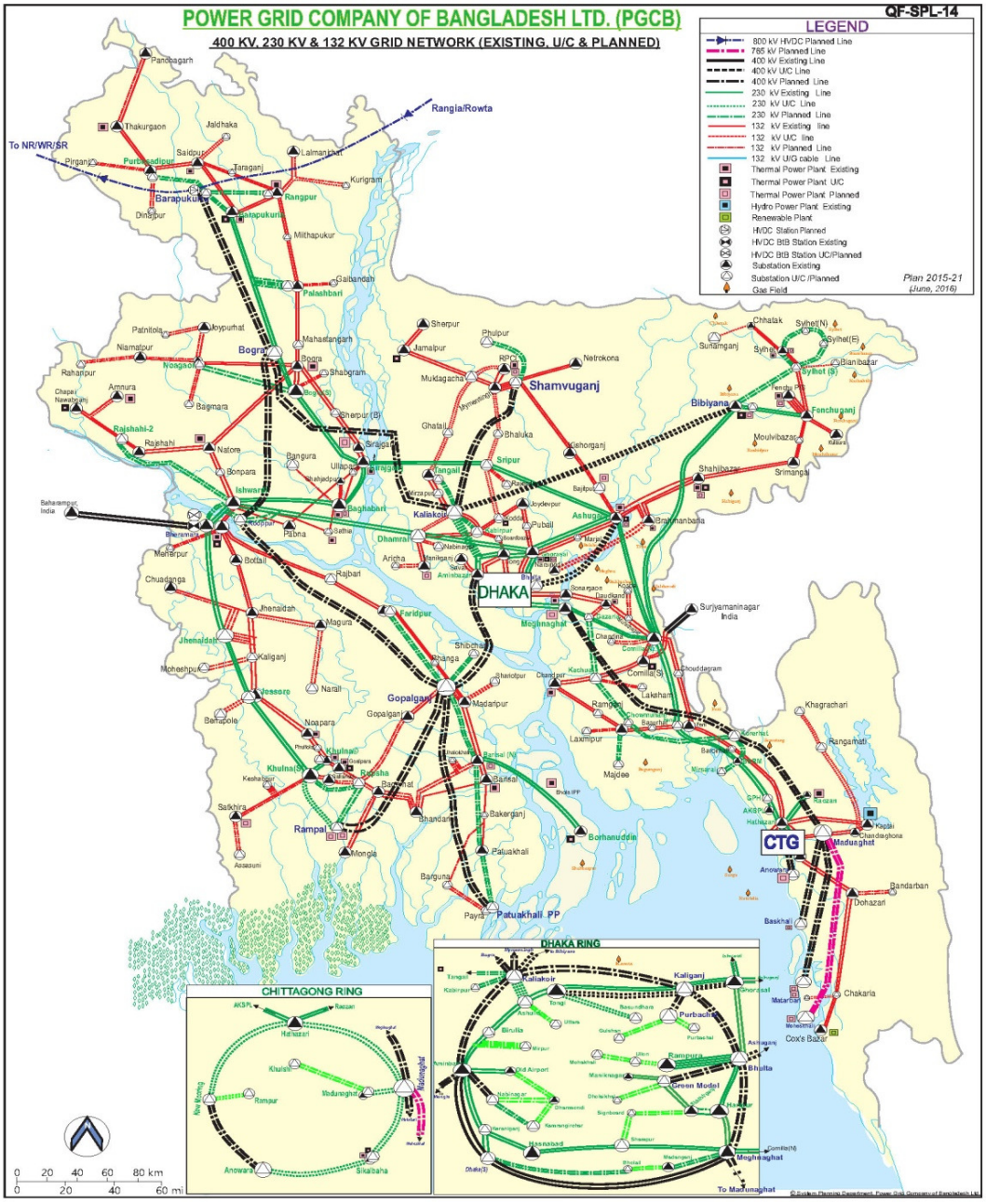


Table-2: PGCB At a glance

Corporate Office	Institute of Engineers Bangladesh (IEB) Bhaban (New) 3rd and 4th floor 8/A Ramna, Dhaka – 1000
Year of Incorporation	1996 [C-31820(941)/96]
Status	Public Limited Company
Business	Transmission of Power
Authorized Capital	Tk. 10 Billion
Paid-up Capital	Tk. 4609.13 Million
Turnover (2014-2015)	Tk. 9378.28 Million
Net profit before tax & WPPF (2014-2015)	Tk. 71.63 Million
Present Manpower as on June, 2015	2372 persons
Transmission Line as on: June, 2016	
400kv	220.70 Circuit km
230kv	3185.166 Circuit km
132kv	6401.628 Circuit km
Substation as on: June, 2016	
400kv	1 Nos. 500MW HVDC Back to Back tation
400/230kv	1 Nos. 520 MVA
230/132kv	19 Nos. 9375 MVA
132/33kv	90 Nos. 12655.5 MVA
Last Five years achievement	
400kv Substation	1 Nos: 500Mw HVDC Back to Back station
400/230kv Substation	1 Nos. 520 MVA
230/132kv Substation	5 Nos:2700 MVA
132/33kv Substation	12 Nos. 1823 MVA
400kv Transmission Line	220.70 Circuit km
230/132kv Transmission Line	559.27 Circuit km
Future Plan (within 2021)	
400kV Transmission line	: 10,297 Circuit km
230kV Transmission line	: 5,081 Circuit km
132kV Transmission line	: 3,711 Circuit km

2.2: Overview of procurement function of PGCB

PGCB is taking huge amount of electricity infrastructure development projects with the help of GOB (Government of Bangladesh) fund and fund of other development partners, such as, World Bank (WB), Asian Development Bank (ADB), Islamic Development Bank (IDB), JICA[11] and a number of foreign organizations (contractors) like Siemens AG, ABB Switzerland, ABB India and local contractors like Energypac Engineering Ltd. and so on.

2.2.1 Project Planning and Project Approval

Some projects are to be approved by ECNEC, depending on volume of budget. Normally after allocating the budget, a DPP[12] is prepared and submitted to Planning Commission with the IEE and EIA report. After approval of DPP, tender or dib document is prepared for floating to the bidders.

PGCB has rigorous planning works with dedicated 'Planning Department' which makes plans and feasibility study of HV[13] transmission lines and HV substations, 'Design & Quality Control' department which makes specification and float tenders, evaluate bids and awards contracts, 'Project' departments which implement and operate those projects and operate contract management.

2.2.2 Tendering Method

PGCB follows 'Open Tendering Method' (OTM) for international tenders, with awarding contracts on 'Turnkey' or 'EPC'[14] basis, which is considered as transparent and efficient way to choose best bidders for any contract on competitive basis. Open tendering method normally includes two procedures:

1. Single stage, two envelope
2. Two stage, two envelope

[11] JICA=Japan International Cooperation Agency
[12] DPP=Detail Project Planning
[13] HV=High Voltage
[14] EPC= Engineering, Procurement and Construction

In complex projects, where specification is difficult to finalize early, it requires discussion with suppliers before finalizing specification and receiving price quotation from them; this needs 'two stages-two envelope' procedure of tendering.

On the other hand, in 'single stage two envelope' procedure, technical offer and price offer are submitted together in two different sealed envelopes.

A typical Tender Documents (Terms of Reference) contains the followings:

Typical tender document contains three (03) volumes.[15]

Volume-3: it contains various forms and schedules.

Volume-2: it contains technical specifications, scope of work and drawings that form parts of specification.

Volume-1: it contains terms and conditions of the contract which help to management of contract. Typical sections are as follows:

a) Instruction to bidders (ITB)
b) Bid data sheet (BDS)
c) Evaluation and qualification criteria (EQC)
d) Eligible countries
e) Employers requirements
f) General conditions of contract (GCC)
g) Special Conditions of contract (SCC)
h) Contract forms
i) Bid forms

The GCC contain general clauses are to be applied on all contracts. The Special Conditions of Contract (SCC) supplement the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions in SCC prevail over those in the General Conditions (GCC).

[15] As for example: Bidding Document For "Design, Supply, Erection, Testing & Commissioning Of Power Transformers With Associated Switchgears On Turnkey Basis Under Renovation, Rehabiliation & Augmentation Of Grid Substations Project"; Contract No. Pgcb/Rrags/2012/Lot-1 & Lot-2

2.2.3 Volume of procurement

The volume of procurement works and projects under taken by PGCB can be understood by the following table:

Table-3: List of Projects [updated on 01-August-2016][16]

On Going Project(s)	Up Coming projects	Completed Projects
1. Bibiyana-Kaliakoir 400 KV and Fenchuganj-Bibiyana 230KV Transmission Line (NG2). 2. Enhancement of Capacity of Grid Substation and Transmission Lines for Rural Electrification. 3. 400/230/132 Network Developmemt project (TRANCHE-2) 4. 132 kV Grid Network Development Project in Eastern Region. 5. National Power Transmission Network Development Project	1. Matarbari Ultra Super Critical Coal-Fired Power Project (II) (PGCB Part: "Matarbari-Madunaghat 400 kV Transmission Line") 2. Energy Efficiency in Grid Based Power Supply Project 3. Construction of Patuakhali (Payra) - Gopalganj 400 kV Transmission Line & Gopalganj 400 kV Grid Substation 4. Power Grid Network Strengthening Project under PGCB 5. Expansion and Strengthening of Power System Network under DPDC Area 6. Madunaghat - Maheskhali 765 kV Transmission Line Project	1. Comilla-Meghnaghat-Haripur 230 kV Transmission Line and Turn in and out at Rampura of Existing Ghorasal-Haripur 230 kV Transmission Line Project 2. Hasnabad-Aminbazar (Savar)-Tongi & Haripur-Meghnaghat 230 KV Transmission Line Project 3. Khulna-Ishurdi and Bogra-Barapukuria 230 kV Transmission Line Project 4. Joydevpur-Kabirpur-Tangail 132 kV Transmission Line Project 5. Second East-West Electrical Interconnector Project (Ashuganj-Jamuna Multipurpose Bridge-Sirajganj 230 kV Transmission Line)

[16] PGCB's Website

On Going Project(s)	Up Coming projects	Completed Projects
6. Barisal-Bhola-Burhanuddin 230 kV Transmission Line Project 7. Western Grid Network Development Project 8. Ashuganj-Bhulta 400 kV Transmission line 9. Amnura 132/33 kV Grid Substation with associated 132 kV Transmission Line Project. 10. Capacity Upgradation (500 MW) of the existing Bangladesh (Bheramara)-India (Baharampur) Grid Interconnection 11. Mongla-Khulna(S) 230 kV Transmission Line 12. Aminbazar – Maowa - Mongla 400 KV Transmission Line Project 13. Dhaka – Chittagong Main	7. Banshkhali - Madunaghat 400 kV Transmission Line Project 8. Barapukuria – Bogra - Kaliakoir 400 kV Transmission Line Project 9. Rooppur - Bogra 400 kV Transmission Line Project 10. Rooppur - Gopalganj 400 kV Transmission Line 11. Enhancement and Strengthening of Power Network in Eastern Region 12. Grid Network Development Project in Southern Zone 13. Bangladesh Power System Security and Efficiency Improvement Project 14. Expansion and Strengthening of Power System Network under Chittagong Area 15. 230 kV & 132 kV Transmission Network Development Project in Western Region	6. Ishwardi-Baghabari-Sirajganj-Bogra 230 kV Transmission Line Project 7. NLDC (National Load Dispatch Centre) Project 8. Three Transmission Lines (132 KV) Project 9. Natore-Rajshahi 132 kV Single Circuit Transmission Line Project 10. Aminbazar-Savar 132 kV Transmission Line & Savar 132/33 kV Substation Project 11. Naogaon - Niamatpur 132 kV Transmission Line Project 12. Ashuganj - Shahjibazar 132 KV Single Circuit Transmission Line Project 13. Shunt Compensation at Grid Substation by Capacitor Banks (Phase-I) Project 14. Bibiyana - Comilla (North) 230 kV Transmission Line Project 15. Construction & Extension of Grid

On Going Project(s)	Up Coming projects	Completed Projects
Power Grid Strengthening Project 14. Institutional Strengthening of PGCB 15. Feasibility Study to Connect Nuclear Power Plant with National Grid	16. North – East Interconnection Project 17. Expansion and Strengthening of Power System Network under DESCO Area (Phase-1)	Substations including Transmission Line Facilities (Phase-1) 16. Meghnaghat-Aminbazar 400 kV Transmission Line (Phase-1) 17. Transmission Efficiency Improvement through Reactive Power Compensation at Grid Substations and Reinforcement of Goalpara Substation 18. Construction of Haripur 360 MW Combined Cycle Power Plant & Associated Substation (PGCB part in EGCB project) 19. Grid Interconnection between Bangladesh (Bheramara) and India (Baharampur) 20. Aminbazar - Old Airport 230 kV Transmission Line and Associated Substations

In every aspect of the works of projects executed by PGCB, i.e., from planning to project execution, there are many vital issues regarding sustainability and there are many relevant factors to address.

Chapter-3:
Sustainable Procurement

3.1: Background of Sustainability

'Sustainability' basically means the capability of an activity to be sustained at a similar level into the future. In present context, it means ensuring that the activities taken today do not jeopardize the future plans and quality of life. It may be defined as-

"A longer term view when making decisions, to ensure that meeting our own needs does not compromise the needs of others both today and for future generations."[17]

The concept of sustainability first emerged into mainstream discourse in 1972, during United Nations Conference on 'Human Environment'. That time serious environmental concerns were starting to be raised as a result of industrial development and practices (on the issues like deforestation, pollution, for example). So conference delegates debated on which was more important:

a) Economic development, or
b) Environmental protection

A series of high profile environmental disasters (such as Exxon Valdez oil spill, Chernobyl nuclear reactor explosion) subsequently raised the public and political profile of environmental issues.

At the same time, social justice issues also became a widespread concern, with a particular focus on racial segregation policies of South Africa. Public bodies were urged to be 'socially responsible' and 'ethical' in their investments, in order to address and recognize the issues of human rights, work rights and equal opportunity.

Through its discussion, the UN had recognized that both economic development and environmental protection were closely linked and mutually reinforcing.

The UN therefore appointed a think-tank, under the chairmanship of **'Gro Harlem Brundtland'** to come up with strategies to enable continuing economic development without threatening the environment. The '**Brundtland Commission'** focused on the

[17] BSI's Sustainable Procurement Guide (BIP 2203)

need to develop a stable relationship between human activity and the natural world. The Brundtland Commission's report was published and defined the 'sustainable development' as-

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."[18]

These ideas were polished by **'Rio Declaration on Environment and Development'**, 1992, where social justice and human rights issues were explicitly added to the mix.

The three dimensional (economic-environmental-social) view of sustainability subsequently became widely accepted. The term **'Triple Bottom Line' (TBL)** was coined by John Elkington, to highlight the need to measure the performance in all those three areas. All the economic, environmental and social issues are addressed by TBL (triple P):

- Profit (Sustainable economic performance)
- People (social sustainability)
- Planet (environmental sustainability)

[18] Brundtland Comission's report , 'Our Common Future', published in 1987.

3.2: What is Sustainable Procurement

Sustainable procurement is an important aspect of sustainable development. Sustainable development has some aspects, such as follows:

- Sustainable consumption (demand-side processes)
- Sustainable production (supply-side processes)
- Sustainable procurement

Sustainable procurement can be also discussed with similar other terms, such as-

Responsible Procurement

Ethical Procurement

Environmental Procurement (Green Procurement)

Some other concepts and terms that can be incorporated into the aspects of sustainable procurement are as follows:

- Corporate Social responsibility (CSR), that is, social impact of purchasing
- Environmental purchasing
- Responsible procurement
- Economic aspects

Therefore, the term 'Sustainable Procurement' emphasizes the full spectrum of economic, environmental social criteria of TBL. It is an approach that takes economic, environmental and social sustainability into account when making procurement decisions. Sustainable procurement may be defined as-

"A process whereby organizations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of

generating benefits not only to organization, but also to society and the economy, whilst minimizing damage to the environment."[19]

According to CIPS review[20]: It's about:

•Socially and ethically responsible purchasing

•Minimizing environmental impact through the supply chain

•Delivering economically sound solutions

•Good business practice (Good governance)

[19] Definition by UK Sustainable Procurement Task Force (Procuring the Future)
[20] Chartered Institute of Procurement and Supply, Sustainable Procurement Review

3.3: Why Sustainability Is So Important in Procurement

Reasons for the focus on sustainability are vast. A number of key drivers for sustainability are as follows[21]:

- Values: there has been a global shift in societal values towards environmental and social concerns, raising governmental, public and pressure group vigilance in regard to the impact of global business.
- Markets: with increased global competition, organizations are finding themselves challenged by customers and financial markets, regarding sustainability credentials.
- Transparency: information on companies' sustainability plans and activities are increasingly demanded by governments, customers, investors and regulators.
- Lifecycle technology: Stakeholders expectations now span whole business process, supply chains and product lifecycles. Sustainability must be managed not just in product design and manufacture, but also through supply, finance, usage, reverse logistics, end-of-life disposal and so on.
- Partnerships: there is an increasing degree of collaboration in sustainability initiatives, including industry alliances and partnerships with public and third-sector organizations, which are able to provide information, guidance, accountability and resources and credibility.
- Corporate governance: there is public demand for sounder governance of corporations-what is a business for? What is the appropriate balance between the interests of shareholders and other stakeholders?

The British Standards Institution[22] argues the importance of sustainable procurement (for buyers) as follows:

"Purchasing goods, services and works, efficiently, with minimum risk and at the best possible value, remain central elements of the job. However, buyers must now consider "value" in a broader way. They must also consider the additional risk and opportunities, including the ethical, social and environmental impacts of *what* they buy. This goes even

[21] John Elkington (Cannibals with forks: Triple Bottom Line of 21st Century Business, 1999)
[22] BSI's Sustainable Procurement Guide

further. Buyers also consider the impacts on the supply chain of *how* they buy and operate. Shortening lead times and purchase prices may seem like a good business strategy, but not at the expense of labor standards further down the supply chain or the risk to your reputation due to worker exploitation."

Though cost is generally perceived as an issue for sustainable procurement, sustainable policies bring long-term benefits and cost-savings at the end. It ensures compliance. It helps to avoid reputational damage and loss of sales. It gives brand image, differentiation and competitive advantage. Sustainable procurement paves the way of cost management, risk management and efficiency.

3.4: Issues of Sustainable Procurement

Sustainable procurement is the procurement for the future, which includes triple bottom line (TBL), that is, People, Planet and Profit (VFM). Activity of today must not endanger the generation of the future. We must create a safer earth and better livable environment; enhance human rights, together with ensuring the profit, VFM and efficient procurement management. And this is challenge in fact.

British Standards Institution[23] cites some aims for sustainable procurement, which may be considered as some of the issues to be addressed for sustainable procurement:

- To minimize negative impacts of goods, services and works (for example, on health and wellbeing, communities or environment) across their lifecycle and through the supply chain.
- To minimize demand for non-renewable resources (example, by reducing purchases, purchasing recycled products, using resource efficient processes)
- To ensure that fair contract prices and terms are applied and respected, at least meeting the minimum ethical, human rights and employment standards.
- To promote diversity and equality throughout the supply chain. Supply chain should reflect the diversity and demographics of the society that they touch and should provide opportunities for small and medium-sized businesses (SMEs) and voluntary sector organizations. Sustainable procurement should also support training and skills development.

In summary, sustainable procurement should attempt to minimize negative impacts and promote positive outcomes for the economy, environment and society.

Some details of potentials and sustainable issues that can be addressed under sustainable procurement are tabled below [using TBL[24] model][25]:

[23] BSI's Sustainable Procurement Guide
[24] TBL=Triple Bottom Line (People, Planet, Profit)
[25] Sustainability in Supply Chains, Module-AD5, CIPS Official Course Book

Table-4: Issues to be addressed under sustainable procurement

Profit: adding economic value	• Securing value for money
	• Effective investment appraisal and capital purchasing
	• Cost management and budgetary control
	• Added value, by-
	  o sourcing efficiencies
	  o supplier appraisal
	  o supplier involvement
	  o quality management
	• Ethical trading to support long term financial viability of suppliers and supply markets, by-
	  o sustainable pricing
	  o ethical tendering & negotiation
	  o payment on time
	• Increase efficiency, by-
	  o using resource efficient goods, services and processes
	  o elimination of waste & redundancies throughout the supply chain
	  o adopting **LEAN** supply model
	• and so on

Planet: adding environmental value	• Input to design and specification of green (eco-friendly) products and services • Sourcing of green (eco-friendly) materials & resources • Green sourcing • Selection, management and development of suppliers with environmental capacity and

	commitment • Reducing waste of resources throughout the sourcing cycle (it can be done with **"4R"**[26] model) • Managing logistics to minimize waste, transportation, pollution, GHG[27] emissions, CO_2 emissions and other environmental impacts. • Minimizing waste to landfill • Mitigation over exploitation of scarce and non-renewable resources. • Addressing climate change • Designing products for disassembly, reuse, recycle and safe disposal at the end of life
People: adding social value	• Encouraging diversity in purchasing teams and among suppliers • Monitoring supplier practices to ensure observance of human rights and labor standards, for example- o Abolition of slavery & child labor o Elimination of forced labor o Conditions of work o Equal opportunity o Freedom of association • Following international labor laws and labor codes, such as, the **ILO declaration**[28] and **ETI base codes**[29]

[26] 4R=Rethink, Reduce, Reuse, Recycle

[27] GHG=Green House gas

[28] ILO (International Labor Organization): The ILO is the UN's specialized agency promoting human, civil and labor rights. It develops consensus documents (Conventions) and less formal codes of conducts, resolutions and declarations (Recommendations). As for example, ILO Declaration on Fundamental Principles and Rights at Work (1998)

[29] ETI (Ethical Trading Initiative): The concept of ethical trading focuses on the meeting of minimum labor & human rights, as set out by the ILO standards. The ETI is a multi-stakeholder

	• Input to health and safety of products and services • Fair and ethical trading practices, such as, following the standards of **Fair trade Organization**[30] • Forming and maintaining a comprehensive corporate level CSR policies

Therefore, this can be realized that 'sustainable procurement' is an 'umbrella term' which includes a number of sustainable issues.

Figure-3: Three spheres of sustainability (sustainable procurement)[31]

association of companies, NGOs and trade union organizations committed to working together to identify and promote internationally agreed principles of ethical trade and employment, and to monitor and independently verify the observance of ethics code provisions.

The ETI publishes a code of labor practices (ETI Base Code) giving guidance on fundamental principles of ethical trading practices, based on international labor standards.

[30] Fair Trade Standards: The World Fair Trade Organization (WFTO)'s principles and charter of fair trade. The WFTO has\developed a charter of fair trade, consisting of 10 key principles that fair trade organizations must follow in their day-to-day operations and which are monitored also.

[31] Website of "Pinterest - The world's catalog of ideas"

Chapter-4:
Literature (and Works) Review

4.1: Recent Works, Trends and Thoughts

There is a global trend towards organizations developing sustainability procurement (purchasing) programs, with many of them doing so as a means of implementing their sustainability or corporate social responsibility programs. Environmental considerations are typically ranked higher than social factors, though priority environmental concerns have human health implications such as toxics. Indeed, the greening of the supply chain was ranked as the number one supply chain issue for 2007. On the social side, fair trade, diversity purchasing and ethical sourcing are showing strong growth trends. The ethical sourcing experience of large brands is starting to pay off in deep knowledge for how to reward and motivate ethical considerations with suppliers going forward, including a focus on supplier collaboration and capacity building.[32]

Top priority concerns of many purchasers are how to screen their suppliers and how to measure the sustainability impacts of their purchases. There are many documented barriers to sustainable purchasing programs, too, including product cost premiums, lack of time and resources, lack of management support and the need for tools, information and training. Governments and universities, i.e. the Sustainability Purchasing Trends and Drivers public sector, are key drivers of sustainable purchasing, universities primarily driven by activist student bodies, and governments by leadership concerns.

Further analysis of sustainable purchasing trends reveals a strong move toward greater collaborations in the supply chain and with stakeholders, whether purchaser to purchaser, purchaser to supplier or purchaser to NGO. As a result of these collaborations, improved awareness, understanding and efficiencies are created. This helps advance a key priority concern of purchasers, which is impact and performance measurement, a trend that will affect how sustainable purchasing evolves in future.

Recent trends and thoughts further concentrate on 'competitiveness' through global sourcing, especially from "low-cost" countries. Latest concerns include:[33]

- Enhancing labor standards and abolition of forced working

[32] https://www.ic.gc.ca/eic/site/csr-rse.nsf/eng/rs00551.html
[33] The official CIPS Course book, module-AD5

- Wages and social security payments
- Elimination of in-equalities of workers and gender discrimination
- Enhancing health and safety standards, working conditions
- Economic resource consumption
- Waste and water management
- Climate change and 'carbon footprint' reduction

Among the initiatives, both national and international attempts have been made to solve those issues. According to 'Responsible Purchasing Initiative'[34], the first step for purchasing organizations wishing to have a fair and positive impact on their supply chains is to ensure that sourcing is in line with –

- The national laws
- And the international agreements (such as ILO conventions, international environmental protocols.

A number of codes and laws have been introduced for sustainable procurement initiatives, such as, ILO conventions, ETI base codes, the Agricultural Ethical Trading Initiatives (AETI), the Social Accountability (SA) 8000: 2001 standard, Fair Trade standard, ISO[35] 14001 (The Environmental Management System standard), ISO 14020+: Eco-labeling standards, the Eco-management and Audit Scheme (EMAS), PAS[36] 2050: 2011, the UN global compact, ISO 26000: 2010 Guidance for Social Responsibility, BS[37] 8903: 2010 Sustainable procurement and so on.

[34] Responsible Purchasing Initiative, Buying Matters
[35] ISO=International Organization for Standardization
[36] PAS=Publicly Available Specification
[37] BS= British Standard

4.2: UNDP Sustainable Development Goals (SDG) and Global Goals

At the United Nations Sustainable Development Summit on 25 September 2015, world leaders adopted the 2030 Agenda for Sustainable Development, which includes a set of **17 Sustainable Development Goals (SDGs)** to end poverty, fight inequality and injustice, and tackle climate change by 2030.[38]

The Sustainable Development Goals, otherwise known as the **Global Goals**, build on the **Millennium Development Goals (MDGs)**, eight anti-poverty targets that the world committed to achieving by 2015.

The 17 SDGs are as follows:

Sustainable Development Goals

Goal 1. End poverty in all its forms everywhere

Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture

Goal 3. Ensure healthy lives and promote well-being for all at all ages

Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all

Goal 5. Achieve gender equality and empower all women and girls

Goal 6. Ensure availability and sustainable management of water and sanitation for all

Goal 7 Ensure access to affordable, reliable, sustainable and modern energy for all

Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation

Goal 10. Reduce inequality within and among countries

[38] UNDP website

Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable

Goal 12. Ensure sustainable consumption and production patterns

Goal 13. Take urgent action to combat climate change and its impacts*

Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development

Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss

Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development

Goal no.12 has its sub-clause 12.7, which is dedicated for sustainable procurement, is indicating that sustainable procurement is a part of sustainable development. The clause is as below:

12.7: Promote public procurement practices that are sustainable, in accordance with national policies and priorities

Therefore, there is no doubt that sustainable procurement issues will be crucial for upcoming days. The world's leading organization UNDP is focusing on promoting the sustainable procurement practices and policies, in order to ensure the sustainable production and consumption patterns.

4.3: Bangladesh 2021 Targets

In the prospective plan of Bangladesh for 2010-2021, Bangladesh holds her vision for **sustainable development**. The plan announces that, "Nothing should be done today which will compromise the well-being of future generations".

The process of economic growth must be equitable as well as environmentally sustainable. The environmental efficacy deteriorates when the environment is degraded and the environmental balance disturbed through overuse, pollution, deforestation, and the consequences of greenhouse gas emissions. Environmentally sound development calls for actions to restore and maintain environmental health while pursuing socio-economic development. Internationally, there is broad consensus that the environment and production systems should be tailored to minimize damage to the environment to ensure the sustainability of development.

The government has developed Bangladesh Climate Change Strategy and Action Plan(BCCSAP) and National Adaptation Programme of Action (NAPA) in 2009 to respond to climate change induced development risks and National Plan for Disaster Management (NPDM) in 2010 to respond to disaster risks. GoB has also developed National Environment Policy (NEP) in 1992, National Forest Policy (NFP) 1995, National Sustainable Development Strategy (NSDS) and other relevant policies for environmental conservations. The basic approaches in BCCSAP, NAPA, NPDM, NEP, NFP and NSDS are to wise use of natural resources, disaster and climate resilient development initiative, pro-poor adaptation and mitigation strategies, green growth, eco-system based disaster risk reduction, all risk resilient urban development and pollution management. Although not required to reduce greenhouse gas emissions given its status as a least developed country, Bangladesh is committed to following a low carbon path, success of which would depend on provision of resources by the international community. But Bangladesh will not compromise on the need for accelerated economic growth and poverty reduction.

Planning Commission has taken an initiative to mainstream poverty-environment-climate change and disaster issues into development planning and budgetary process.[39]

GoB dictates its one of the strategy regarding procuring development projects as follows:

"All development initiative needs to be pro-poor, environmental sustainable, climate change and disaster resilient. Therefore, Planning Commission and relevant agencies will develop proper capacity building mechanism to ensure that development projects are designed in a sensible way to increase country's resilience".[40]

It is very clear that, the Government of the People's Republic of Bangladesh has a mandate to ensure that all its development projects and works are being sustainable. At least, the processes and procedures of the projects and procurements should follow the national laws and international guidelines of sustainability. To reach this goal, GoB is also trying to incorporate the global mandates in its national plans and accommodate the globally accepted sustainable policies and procedures in its national activities.

[39] Prospective Plan of Bangladesh, 2010-2021, Planning Commission, Ministry of Planning, Government of People's Republic of Bangladesh
[40] -Same-

4.4: Integration with UNDP's MDGs and SDGs in National Plan

Bangladesh has integrated Millennium Development Goals (the MDGs, dictated by UNDP) within the economic and social targets of its Sixth Five Year Plan (2011-15). General Economics Division (GED), Planning Commission has been monitoring and reporting the MDG status through the "Millennium development Goals: Bangladesh Progress Report". The latest report on MDGs (2012) revels that Bangladesh has already met some targets of MDGs.

In Bangladesh, the first round of post-2015 national consultations provided opportunities for the country to reflect and draw upon its experiences with the MDG framework, bolster its say in shaping new global development goals and to ensure that the goals set are relevant to Bangladesh development context. To this end, the Government of Bangladesh (GoB) committed to lead the national consultative process in an inclusive and participatory manner.

On 10 November, 2012, the GoB conducted the first National Expert Level Consultation Conference that 'kick-off' the national consultation process. The aim of the conference was to identify gaps and challenges that exist in relation to sustainable development and generate ideas on preliminary goals, targets and indicators for Post-2015 development agenda. The summary report from the first national conference set the motion for the subsequent consultations. Between November 2012 and May 2013, a number of consultation meetings were organized to create a draft framework. These dialogues were held at the national and sub-national levels and participated by concerned Ministries, UN agencies, Development Partners, civil societies and media representatives. The draft framework was reviewed by various experts from the UN System who provided insights and inputs for inclusion in May 2013, prior to the final consultation with the Hon'ble Prime Minister Sheikh Hasina and Ministers of Finance, Planning as well as Foreign Affairs, among others, present. The national document of Bangladesh contains 11 goals, 58 targets and 241 indicators. *The goals set are*:[41]

- Goal 1: Unleash human potentials for sustainable development

[41] Millennium development Goals: Bangladesh Progress Report, 2015; by GED (General Economics Division), Planning Commission

- Goal 2: Eradicate poverty and reduce inequality
- Goal 3: Ensure sustainable food security and nutrition for all
- Goal 4: Universal access to health and family planning services
- Goal 5: Achieve gender equality
- Goal 6: Ensure quality education and skills for all
- Goal 7: Increase employment opportunities and ensure worker rights
- Goal 8: Ensure good governance
- Goal 9: Promote sustainable production and consumption
- Goal 10: Ensure environmental sustainability and disaster management
- Goal 11: Strengthen international cooperation and partnership for sustainable development

Bangladesh thus prioritizes goals with Global Perspectives and rationale for Post 2015 Development Agenda (P2015DA) following the guidance from Rio +20 conference and UNDP goals (17 SDGs) from the "Transforming Our World: The 2030 Agenda of Sustainable Development". She has included sustainable development goals in the post 2015 agenda (proposal to UN with 11 goals). On "Promote sustainable production and consumption" goal, sustainable use of resources for production and consumption pattern has been proposed along with measures to ensure further efficiency.[42]

Bangladesh is now in the process of formulating its Seventh Five Year Plan (7th FYP) for the period of 2016-2020. While formulating the plan document, the proposed goals by both OWG were well taken into consideration so that the proposed goals of the SDGs can be illustrated in the national plan. The goals of SDGs were also given emphasis while setting up the priority areas of the 7th FYP. Bangladesh tries to address the issues of international goals into the Seventh Five Year Plan because it is the guiding document of the country that is implemented in next five years' time.

[42] Post 2015 Development Agenda: Bangladesh Proposal To Un, by GED, Planning Commission

Chapter-5:
Findings and Data Analysis

5.1: Sustainability Issues Related to Procurement in PGCB Ltd.

There are a lot of sustainability issues to be addressed in procurement culture of PGCB.

PGCB Ltd. Procures and implements large amount of infrastructure development projects each year, which includes financial viability issue, effectiveness and efficiency related issues of the project completion, design and quality control, land acquisition, feasibility issues, and above all a national grid development, augmentation and renovation. Every aspect of those activities creates an impact on the organization, society, national economy and environment as a whole. Therefore, all those actions and issues together encompass the one generic term at the center-that is "Sustainability". Sustainable procurement should be at the center point of the development projects.

HV power transmission lines and substation projects not only embraces efficiency and VFM[43] issues of project execution, but also encompasses major social impacts (land acquisitions, labor standards, human rights, diversity, and domestic preference), environmental impacts (usage of HV equipment and power radiation, usage of non-renewable sources of energy), and occupational safety and health hazards.

TBL model of sustainability incorporates following areas:

- Profit
- Planet
- People

Each of the following area can be elaborated, in case of PGCB's activities, to take many other relevant issues into account.

Profit (Economic viability): Private sector wants to maximize its profit and surplus. Public sector aims at ensuring value for money. PGCB uses public fund and emphasizes on the efficient and effective use of that fund. Value for money typically comprises the following principles:

[43] VFM=Value for money

- Economy: securing resources at least possible cost and minimizing wastage. For this, PGCB uses competitive Open Tendering method.
- Efficiency: getting maximum possible output from the available inputs. For this, PGCB makes separate project execution team under a Project Director (PD) for rigorous monitoring of the progress of a project.
- Effectiveness: the extent to which declared goals are met. For this, PGCB makes rigorous contract management.

Regarding profit or income, wheeling charge is only the source of making income of PGCB. In this case, PGCB makes attempts to keep the 'system loss' as low as possible. It is also a KPI of the performance of PGCB.

Planet: It means the earth and environment. Future earth should be safer and environment should be cleaner. We should protect our earth from climate change. Some by-products of our activity create harm for the environment. [44]GHG emission, carbon emission from automobiles, power generation and other engineering activities are increasing global warming and climate change. Also too much usage of fossil fuel and non-renewable energy shows the path of serious energy crisis in near future. So here utmost importance comes on focusing 'Renewable' energy sources.

Also, high voltage substations and transmission lines emits high some radiation which may cause harm to human health and safety. Recent researches show that high voltage equipment emits low frequency radiation, which is not very harmful for environment health.

Figure-4: A long HV Transmission Line over a River in Bangladesh

But long transmission line projects create some negative impact on forestations, agricultural lands and ponds and rivers. River flows are impeded by towers, deforestations happen because of damaging forests and trees. Not only have those, but

[44] GHG= Green House Gas

also some severe accidents (permanent health injury and death injury) happen now and then during the maintenance work on high voltage transmission lines.

Figure-5: Transmission Line causes deforestation; green trees are cut for the path of clearance

Figure-6: Transmission Line crossing across agricultural lands

People: It hints the social impact of any project or activity on the human beings. So many organizations address social issues and impacts in their CSR policies.[45] Any large project of PGCB may endanger the human living areas, human rights and human livings; so they may need to be rehabilitated. Land acquisitions need to be done in a proper and ethical way, so that proper rehabilitation may become possible and human rights are not hampered.

- Land Acquisition issues: Under the transmission lines, no high rise buildings can be built due to electrical section and safety clearance. Electrical tower also occupies the land and there is not possible to make any residence there. So this transmission line projects

Figure-7: HV Transmission Line and Tower in a Densely Populated Area in Dhaka

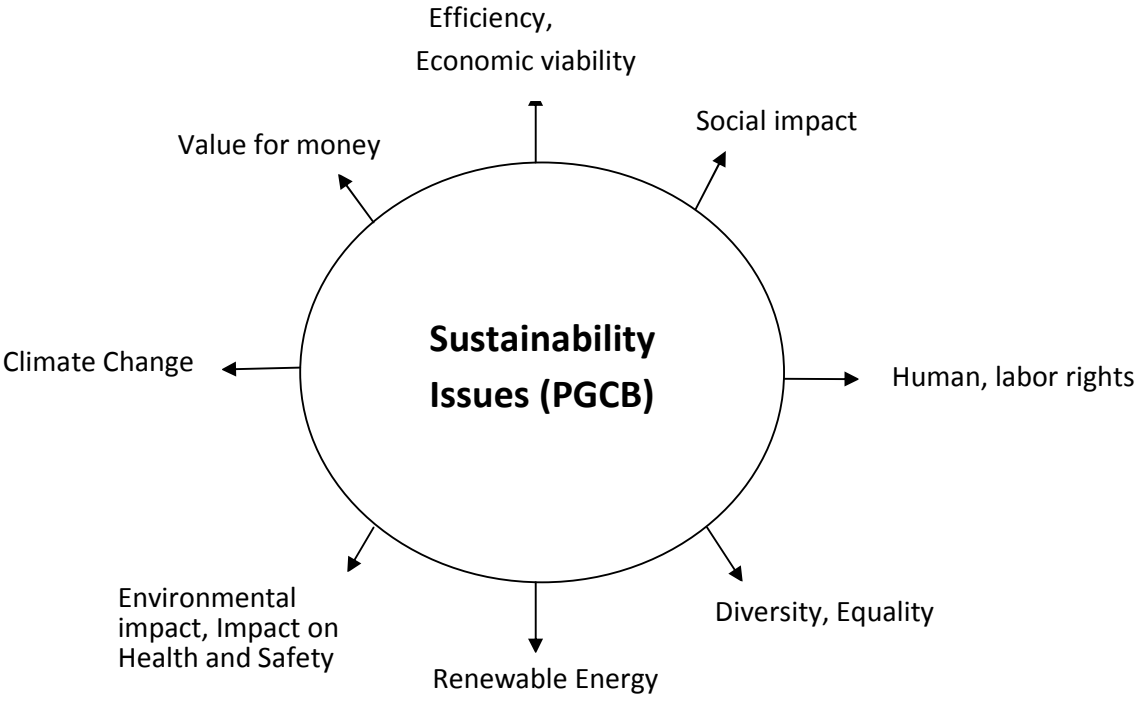
[45] CSR=Corporate Social responsibility

cause more problem for society in urban areas. Sometimes it becomes difficult to address the sufferer properly.

- Labor Laws, Human Rights and Working Conditions: No organization can cut basic human and labor rights. Therefore, they formulate rules and laws to protect human rights, labor rights. Many international organizations have their well formulated codes, standards and policies to address those issues. PGCB needs to monitor their supplier so that suppliers well comply with those laws and regulations of employment practices.
- Diversity: Any organization cannot make discrimination and inequality on the basis of gender, race, religion etc. Diversity should be maintained in the workforce and work environment. PGCB can maintain this in its own workforce and monitor the suppliers.
- Small and Medium Enterprise: PGCB should the give chance to SMEs to come into the main stream and to enhance the local (domestic) firms. Otherwise, local firms will not prosper and PGCB will be locked into some major firms only.

Sustainability factors that may be considered in sustainable procurement can be shown at a glance as below in figure-1:

Figure-8: Sustainable Issues in PGCB's Procurement



5.2: Existing Practices and Procedures of Procurement in PGCB Ltd.

PGCB follows the all the rules, acts and regulations dictated by Government of Bangladesh (GoB), such as, Environmental Conservation Act & Rules, Electricity Act, etc. Also PGCB follows the internationally agreed laws like ILO, labor laws, etc. and the guidance of Donor Agencies and their Environmental Management Plan (EMP).

5.2.1: IEE & EIE Study: These studies are mandatory for **'Environmental Clearance Certificate'** from 'Department of Environment (DoE) for a project. And 'Environmental Clearance Certificate' is essential for project approval. According to Energy Conservation Rule-1997, all industries and projects are to be divided into the following 4 categories, based on impact they create environment:

- Green
- Orange-A
- Orange-B
- Red

According to the Environment Conservation Act 1995 and Environment Conservation Rules 1997, all transmission line and sub-stations falling under 'Red Category' project which requires Initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) to get 'Site Clearance' and 'Environmental Clearance' from the Department of Environment (DoE). Therefore, PGCB conduct RS (Route Survey), IEE and EIA study with the help of consultants.

The main objectives of the IEE study included[46]:

- Identifying the current environmental and social baseline of the area;
- Identifying important environmental and social components which may be impacted by the project;
- Assessing the potential environmental impacts, including any residual impact of the proposed project;

[46] Route Survey, IEE, EIA and RP study of Mongla-Maowa-Aminbazar 174 Km. 400 kV Transmission Line and Aminbazar 400/230 kV Substation project, by 'Center for Environmental and Geographic Information Services.

- Identifying mitigation measures to minimize the adverse impact;
- Preparing initial Environmental Management Plan (EMP) and Preparing an Environmental Monitoring Plan;
- Preparing a ToR for an EIA study.

The main objectives of the EIA study included[47]:

- Identifying the current environmental and social baseline of the area;
- Identifying important environmental and social components which may be impacted from the project;
- Assessing the potential environmental impacts, including any residual impact of the proposed project;
- Identifying mitigation measures to minimize the adverse impact;
- Preparing initial Environmental Management Plan (EMP);
- Preparing an Environmental Monitoring Plan;
- Preparing a ToR for an EIA study
- Preparing a budget for Environmental Management Plan and Environmental Monitoring Plan

5.2.2: Development Project Proposal (DPP) Preparation: DPP is necessary to be approved by 'Planning Commission'. It contains detail plans of the project. It contains mainly the following:

- Load flow study and feasibility study of transmission projects, year wise financial and physical targets, which indicates the effectiveness of the project
- Economic and Financial analysis, audited balance sheet, unit cost calculations, IRR (Internal rate of return) and NPV (Net positive value) calculations of the project, location wise cost breakdown, detailed annual phasing of costs, etc., which indicates the economic viability and efficiency of the project.
- Environmental Clearance certificates, land acquisitions, acquisition of assets, certificate of Power Division regarding minimum requirement of land for the project, which indicates environmental and social issues of sustainability.

[47] EIA Report for- Proposed Mongla-Maowa-Aminbazar 174 Km. 400 kV Transmission Line and Aminbazar 400/230 kV Substation project

- Project management and organ gram, Procurement Plan, Layout Plan and Action Plans for the project
- Comments from Planning Commission, ERD (Economic Relation Department) and other minutes of meetings.

As long as DPP goes right in all respects, project becomes readily prepared to be executed and a well organized DPP helps to procure a project in a sustainable way.

5.2.3: Tender Document Preparation: Tender (bidding) document preparation is the one of the most vital part of project management. Based on DPP, tender document is prepared. It forms the basis of contract management. Sometimes, it is modified according to donor agencies (such as, ADB, WB, IDB, JICA, KFW, etc.) requirement. It contains the followings:

- Terms of Reference (ToR), bidding procedures
- General conditions of contract (GCC) and special conditions of contract (SCC)
- Instructions to Bidders (ITB)
- Employers requirements
- Bid evaluation and qualification criteria
- Scope of work, detail technical requirement
- Other associated contract and bidding forms

GCC and SCC clauses are set to manage the terms of reference, supervise and monitor the contractors and manage the contract. Here sustainability issues can be incorporated. As for example, some clauses are mentioned below[48]:

[48] **BIDDING DOCUMENT** for "Design, supply, installation, testing and commissioning of 132/33kV Substations at Nawabganj, Srinagar, Narail, Jhenaidaha and Magura Under Enhancement of Capacity of Grid Substations and Transmission Lines for Rural Electrification under Rural Electricity Transmission and Distribution (T&D) Project of the World Bank. IDA Credit: 5381-BD, ICB No.: PGCB/W-04, (Bid Identification No.: PGCB/WB/ ECGSTL/SS/W04); Employer: Power Grid Company of Bangladesh Limited, Country: The People's Republic of Bangladesh

22.2.3 Labor Laws

The Contractor shall comply with all the relevant labor Laws applicable to the Contractor's Personnel, including Laws relating to their employment, health, safety, welfare, immigration and emigration, and shall allow them all their legal rights.

The Contractor shall at all times during the progress of the Contract use its best endeavors to prevent any unlawful, riotous or disorderly conduct or behavior by or amongst its employees and the labor of its Subcontractors.

The Contractor shall, in all dealings with its labor and the labor of its Subcontractors currently employed on or connected with the Contract, pay due regard to all recognized festivals, official holidays, religious or other customs and all local laws and regulations pertaining to the employment of labor.

22.2.4 Rates of Wages and Conditions of Labor

The Contractor shall pay rates of wages, and observe conditions of labor, which are not lower than those established for the trade or industry where the work is carried out. If no established rates or conditions are applicable, the Contractor shall pay rates of wages and observe conditions which are not lower than the general level of wages and conditions observed locally by employers whose trade or industry is similar to that of the Contractor.

The Contractor shall inform the Contractor's Personnel about their liability to pay personal income taxes in the Country in respect of such of their salaries, wages and allowances as are chargeable under the Laws for the time being in force, and the Contractor shall perform such duties in regard to such deductions thereof as may be imposed on him by such Laws.

22.2.5 Working Hours

No work shall be carried out on the Site on locally recognized days of rest, or outside the normal working hours **stated in the PC (Particular Conditions),** unless:

(a) otherwise stated in the Contract,

(b) the Project Manager gives consent, or

(c) the work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in which case the Contractor shall immediately advise the Project Manager.

If and when the Contractor considers it necessary to carry out work at night or on public holidays so as to meet the Time for Completion and requests the Project Manager's consent thereto, the Project Manager shall not unreasonably withhold such consent.

22.2.7 Health and Safety

The Contractor shall at all times take all reasonable precautions to maintain the health and safety of the Contractor's Personnel. In collaboration with local health authorities, the Contractor shall ensure that medical staff, first aid facilities, sick bay and ambulance service are available at all times at the Site and at any accommodation for Contractor's and Employer's Personnel, and that suitable arrangements are made for all necessary welfare and hygiene requirements and for the prevention of epidemics.

The Contractor shall appoint an accident prevention officer at the Site, responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the performance of the Contract, the Contractor shall provide

whatever is required by this person to exercise this responsibility and authority.

The Contractor shall send to the Project Manager, details of any accident as soon as practicable after its occurrence. The Contractor shall maintain records and make reports concerning health, safety and welfare of persons, and damage to property, as the Engineer may reasonably require.

The Contractor shall throughout the contract (including the Defects Notification Period): (i) conduct Information, Education and Consultation Communication (IEC) campaigns, at least every other month, addressed to all the Site staff and labor (including all the Contractor's employees, all Sub-Contractors and Employer's and Project Manager's' employees, and all truck drivers and crew making deliveries to Site for construction activities) and to the immediate local communities, concerning the risks, dangers and impact, and appropriate avoidance behavior with respect to of Sexually Transmitted Diseases (STD)—or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular; (ii) provide male or female condoms for all Site staff and labor as appropriate; and (iii) provide for STI and HIV/AIDS screening, diagnosis, counseling and referral to a dedicated national STI and HIV/AIDS program, (unless otherwise agreed) of all Site staff and labor.

The Contractor shall include in the program to be submitted for the execution of the Facilities under Sub-Clause 18.2 an alleviation program for Site staff and labor and their families in respect of Sexually Transmitted Infections (STI) and Sexually Transmitted Diseases (STD) including HIV/AIDS. The STI, STD and HIV/AIDS alleviation program shall indicate when, how and at what cost the Contractor plans to satisfy the requirements of this Sub-Clause and the related specification. For each component, the program shall detail the resources to be provided or utilized and any related sub-contracting proposed. The program shall also include provision of a detailed cost estimate with supporting documentation. Payment to the Contractor for preparation and implementation this program shall not exceed the Provisional Sum dedicated for this purpose.

22.2.15 Prohibition of All Forms of Forced or Compulsory Labor

The contractor shall not employ “forced or compulsory labor” in any form. “Forced or compulsory labor” consists of all work or service, not voluntarily performed, that is extracted from an individual under threat of force or penalty.

22.2.16 Prohibition of Harmful Child Labor

The Contractor shall not employ any child to perform any work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

In the special (particular) conditions of contract, **working hours** are to be mentioned as below:

PC 22.2.5.	Working Hours: Normal working hours are from 9:00am to 5:00pm.

In the special (particular) conditions of contract, one additional clause has been added under “Rates of wages and conditions of labors”, indicating diversity and equality:

PC 22.2.4	Rates of Wages and Conditions of Labor The following paragraph is added at the end of GC Sub-clause 22.2.4: "The Contractor shall: (i) comply with all applicable labor laws and related international treaty obligations of the Employer country ; (ii) may engage women workers as wage laborers depending on their skill; and (iii) provide equal wages for equal work between men and women.”

In the special (particular) conditions of contract, one additional sub-clause has been added to ensure the monitoring the environmental management:

PC 22.9	A GC Sub-clause 22.9 shall be added as follows: The Contractor shall carry out its responsibility of implementing the EMP, Environmental Code of Practice (ECoP) and other environmental and safety measures to complying with the Section-17 (Environmental Management) of volume 2 of 2 of the Bidding document. The Contractor shall not design, purchase, and install transformers containing PCB materials which is strictly prohibited. To perform the work the contractor must hire at least one environment, health and safety supervisor for this contract who should report monthly to the Employer for any breach of guideline. The EMP implementation cost shall be as per Price Schedule 7 of the Bidding document.

5.3: Questionnaire and Data Analysis

The main topic of this study is to conduct a survey, collect some data and make an analysis to spot out the real life scenario of the following concerns in the context of PGCB:

1. Are the globally adopted sustainable procurement practices & guidelines applicable for the procurement processes of PGCB Ltd.?
2. To what extent the existing procurement practices and policies of PGCB Ltd. are sustainable in the context of sustainable bottom lines (Triple Bottom Lines, TBL)?

A survey was executed with some questionnaire with predetermined format discussed in chapter-1. First of all, a general question was discussed with several sets of stakeholders to picture out the depth of knowledge and concept about sustainability issues in broad sense, like the TBL issues. Then the other responds of those respondents have been tabulated and the obtained data have been analyzed to reach the final conclusion about the above research concerns.

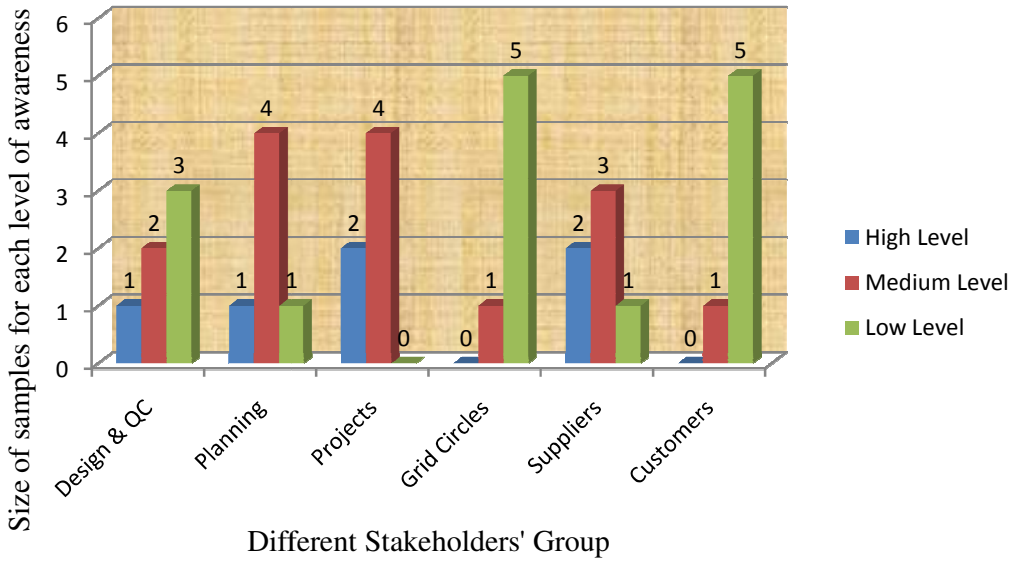
The results of the survey are shown below in tabular format and graphical presentation:

Question-1: Do you know what are the issues of sustainable procurement (TBL)?

Table-5: Level of knowledge and awareness about sustainable procurement issues of different stakeholders:

Level of awareness	Sample of Design & QC dept.	Sample of Planning dept.	Sample of Projects dept.	Sample of Grid and system operation dept.	Sample of Suppliers' community	Sample of consumers' community
High	1	1	2	0	2	0
Medium	2	4	4	1	3	1
Low	3	1	0	5	1	5

Figure-9: Graphical Representation of-
Level of knowledge and awareness of sustainable procurement issues of different stakeholders



It is found that, only those who are closely related with projects have high knowledge about sustainability. 33% from the 'Project department' and the Suppliers' group have high level of awareness. Others have not sufficient awareness of this concept. Especially the consumers of the projects have a very low level of concept about sustainable procurement. This indicates the need for the **promotion of awareness** and various awareness training programs for those stakeholders.

Question-2: Do you think the issues of sustainability (TBL) are important for the procurement process of PGCB Ltd.?

Table-6: Importance of sustainability for the PGCB's procurement process:

Opinion of the respondents	Category of respondents					
	Design &QC dept.	Planning dept.	Projects dept.	Grid and system operation dept.	From Suppliers' Community	Consumers' community
Yes	6	6	6	6	6	6
No	0	0	0	0	0	0

100% of the respondents opine that sustainability issues are important for the procurement processes and projects of PGCB Ltd. The volume of the projects carried out by PGCB is large enough and those electrical infrastructure projects cut across the sustainability issues (environmental, social and economic issues) inevitably.

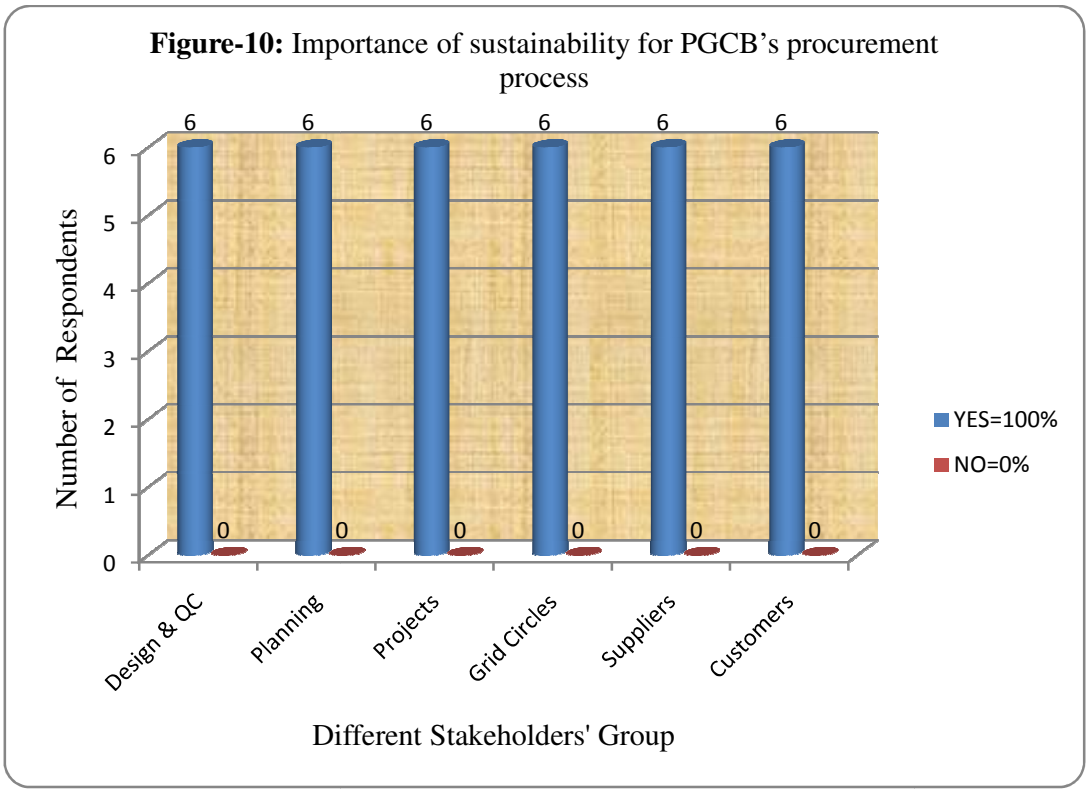


Figure-10: Importance of sustainability for PGCB's procurement process

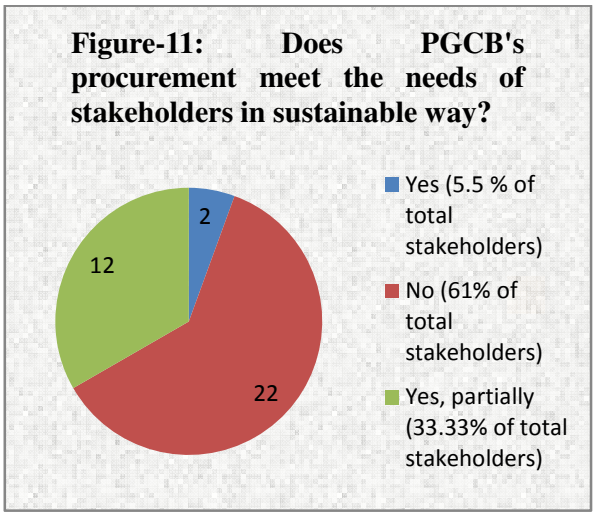
Question-3: Does PGCB's procurement and projects meet the needs of the organization and its stakeholders, without compromising the ability to continue to do so in future-example by depleting resources?

Table-7: Meeting the Needs of Organization and Stakeholders in sustainable way:

Opinion of the respondents	Category of respondents					
	Design &QC dept.	Planning dept.	Projects dept.	Grid and system operation dept.	From Suppliers' Community	Consumers' community
Yes	1	0	0	0	0	1
Yes, Partially	1	2	4	1	3	1
No	4	4	2	5	3	4

Almost all of the respondents opine that meeting the needs of the stakeholders are possible at the expense of some resources which will reduce our ability to continue in the future. This phenomenon can be clearly explained as below:

In Air insulated substations, large area is needed and transmission lines need to run across the lands of long area. Conductors and other materials are formed by various metals and transformers are 'oil type' using huge volumes of oil, all of which are non-renewable resources. So long as it is not possible to depend on the **renewable resources**, it will not help us to preserve the ability for the future.



Not only using up the mineral resources, but also occupying the large area of lands and forests hamper our free spaces for forestation and vegetation. In a small country like Bangladesh, land is very precious. Occupying those lands creates extra pressure on our survival in the future.

Very few opine and argue that, upcoming technology of GIS (Gas Insulated Substations) require much less space for a substation than the conventional ones. Already this technology is now being started to be used in Bangladesh. Underground cable networks are helpful in the urban areas which need less clearance distance and space. Also VHL (very high voltage transmission lines) and UHL (Ultra high voltage transmission lines) can be used which need less conductor but carry more power more efficiently. By adopting those upcoming technologies, meeting the needs of stakeholders is possible in a sustainable way. But it is obvious that this moment those require additional cost.

Therefore, though those challenges can be overcome by ultra modern, cost effective and environment-friendly technologies, this is still out of reach. The challenges come from three dimensions of constraints:

- Resource constraints
- Cost constraints, and
- Time constraints

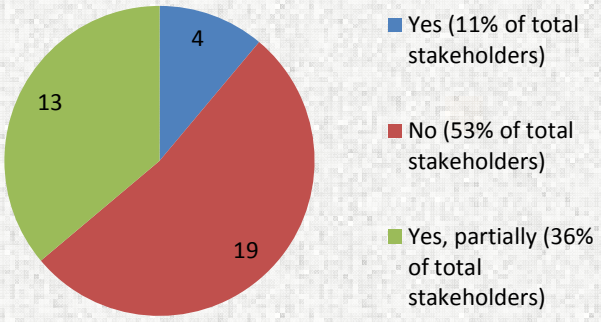
Question-4: Does PGCB Ltd.'s procurement and projects protect the economic security of the organization, without any negative environmental or social impact?

Table-8: Protecting the economic security of Organization without negative environmental & social impacts:

Opinion of the respondents	Category of respondents					
	Design & QC dept.	Planning dept.	Projects dept.	Grid and system operation dept.	Suppliers' community	Consumers' community
Yes	1	1	0	0	2	0
Yes, partially	2	4	1	3	3	0
No	3	1	5	3	1	6

Almost 53% of the respondents opine that economic growth & activity of PGCB has more or less negative impact on environment and society. Some also place some arguments. There are many arguments available to explain this phenomenon:

Figure-12: Protecting the economic security of Organization without negative environmental & social impacts



Though the procedures of project approval take some environmental and social issues into account as priority condition as per the guidance of DoE of GoB and international laws and those environmental and social obligations are monitored through contract management procedures; still there are some laggings & challenges (barriers) in planning, implementing and supervising the sustainable projects which create negative impact on environment and the society:

- The working conditions, working hours and labor rights dictated in the GCC of the projects remain mostly in black and white only, those are not practically and

properly maintained. There is a gap between the written terms and implementation of those terms. There is also some shortcomings in the supervision and monitoring of the projects. The employer (PGCB Ltd.) and the Turn-key Contractor are in obligation to complete the project in time. So labor laws and human rights at the site are sometimes neglected and ignored.

- Local contractors and sub-contractors employ female-workers but they discriminate between male and female workers in terms of respect and payment.
- Diversity in workplace is not properly addressed. There is problem of inequality and discrimination.
- Proper health and safety measures are not maintained at the workplaces and project sites. Occupational hazards and accidents are nor rare in PGCB.
- The CSR policy of PGCB is not still formed and maintained. This is a great lagging for PGCB in respect of sustainability issue.
- PGCB also does not properly supervise the first-tier, second-tier and other tiers of suppliers in the supply chain to monitor their policies.
- There is no KPI (Key Performance Index) of PGCB's performance regarding sustainable procurement issues.

Other **Environmental issues of the projects of PGCB Ltd.:**

Figure-13: HV transmission line and tower, occupying the landfills, plots and creating life hazard for urban people in a populated residential are in Dhaka

- Obviously, agricultural lands are damaged, landfills are occupied, ponds are filled up, green trees and forests are cut down.
- Resettlement activity against the environmental damage is not enough at all.
- High voltage transmission line emits only low frequency radiation. Recent studies show that radiation is not so harmful for human health. Starting in the late 1970s, researchers began to investigate the possibility that

exposure to magnetic fields might have an adverse effect on human health. Since then, scientists have conducted many studies designed to determine whether or not exposure to EMF affects human health. Scientists have uncovered only weak and inconsistent epidemiological associations between exposure to transmission line magnetic fields and adverse health effects[49].

- Electrical clearance, safety clearance and sectional clearance are very important for high voltage equipment and transmission lines. Not maintaining proper clearance may cause threat for life. In densely populated urban areas, sometimes those clearances are not maintained between (residential (& commercial buildings) and HV transmission lines. Lack of awareness in general people is responsible for this.

There are some major **social issues** also, which includes **"Property Ownership issues" and "Compensation issues"**; property owner issues are often raised by individuals or communities along proposed transmission line routes. One concern relates to how some property owners bear the burden so that everyone else can use the electricity, pitting property owner rights versus public good. Another concern relates to who should be considered as affected by the new line. There is often a feeling of unfairness between those that use electricity and those that bear the impacts of the facilities required to support that use.

These issues are settled by **"Electricity Act"** of GoB. PGCB also follows this act in case of making **HV substations and Aerial Transmission Lines and Underground Transmission Lines.**

- During establishing any HV substations, land property is bought from public with payment as per government rate. Some landowners do not regard this payment as a good compensate for their land.

[49] Environmental Impacts of Transmission Line, The Public Service Commission of Wisconsin

- In case of making aerial transmission lines, PGCB does not buy the necessary lands; rather only nominal compensation is given to landowner for any damage of structures, crops or trees and for any other damage. So the money paid to landowners is meant to compensate them for having a transmission line cross their property. These payments are negotiated between the landowner and the utility. Some landowners do not regard the payments as sufficient to truly compensate for the aesthetic impacts and the loss of full rights to their own land. This is especially true if the landowner is not compensated for the "highest and best use" of the affected parcel.

Figure-14: Public Property is Occupied by HV Tranmission Tower Structure and Foundation, Public do not get the compensation payment for this occupied land

- Property owners, who live near the line, but not on the ROW, might be affected but are not compensated. Subsequent owners of a property in a transmission ROW are usually not compensated because the easement payment is most often a one-time payment paid to the owner at the time of easement acquisition.
- The landowners and house owners living near the transmission line, need to re-shape the design of their buildings and structures, but do not get any compensation.

Therefore, social impacts are growing worse day-by-day and public disgrace is high. Sometimes legal disputes arise and public (general people, sufferers) move for litigations in court against the state (PGCB).

Recently, as an example of public disgrace and social issue, huge public concern is growing regarding 'Rampal Coal Power Plant" which is to be built near the world heritage of "Sundarbans". The authority concerned with the power plant is telling that

will not hurt Sundarbans. But recent study regarding EIA of that power plant is reveals that the coal transport for the power plant through the rivers of sundarbans may increase risk for the endangered species of animals like "Royal Bengal Tigers" and the Dolphins[50].

So the public disgrace creates major social problems in our country. One of the facts (reasons) behind this is given in the figure below:

Figure-15: Public/Social/Civil problems created by HV Transmission Lines, causing public dissatisfaction

[50] The Daily ProthomAlo, dated: 23 August, 2016

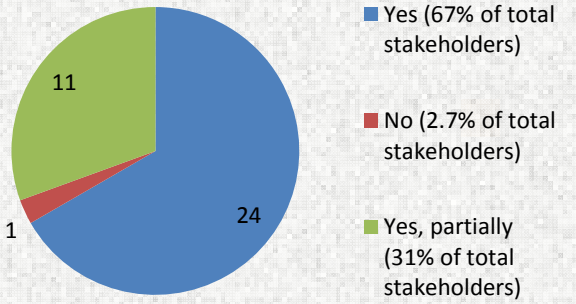
Question-5: Does PGCB's policy for procurement and projects comply with international standards and labor laws?

Table-9: Compliance with international standards and labor laws:

Opinion of the respondents	Category of respondents					
	Design &QC dept.	Planning dept.	Projects dept.	Grid and system operation dept.	Suppliers' community	Consumers' community
Yes	5	4	2	6	5	2
Yes, partially	1	2	4	0	1	3
No	0	0	0	0	0	1

Maximum respondents opine that policy and procedures of procurements and projects of PGCB comply with the international standards. Actually the procedures for procuring projects and contract management comply with the government laws and international agreements in black and white. But the actual problems of implementing and monitoring are already discussed before.

Figure-16: Policy Compliance with labour laws and international standards

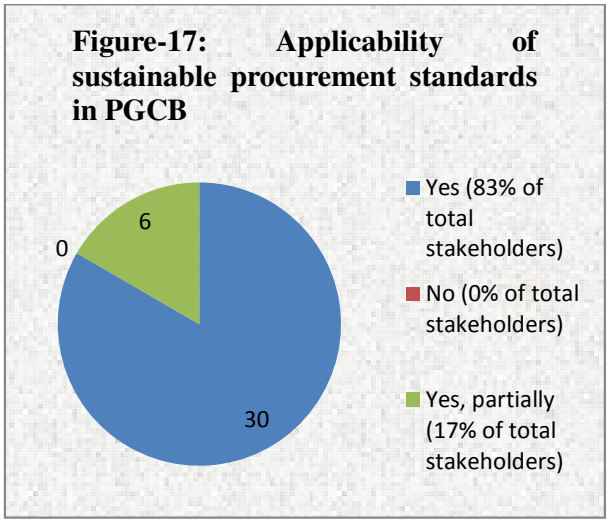


Question-6: Can international sustainable procurement standards and policies be applied and implemented in PGCB Ltd.?

Table-10: Applicability of sustainable procurement standards in PGCB Ltd.:

Opinion of the respondents	Category of respondents					
	Design &QC dept.	Planning dept.	Projects dept.	Grid and system operation dept.	Suppliers' community	Consumers' community
Yes	6	5	4	4	6	5
Yes, partially	0	1	2	2	0	1
No	0	0	0	0	0	0

Almost all of the respondents place the acknowledgement that international sustainable procurement standards and policies can be applied and implemented in PGCB Ltd. PGCB works with the international bidders and contractors who are aware with those sustainable standards. Those contractors and manufacturers are also improving their standards in the context of sustainability to survive in the world wide competition. The donor agents are also trying to incorporate and implement those standards in the projects carried out by PGCB.



Regarding the implementing the sustainable procurement standards, the culture in the organization is a major factor. Both the internal and external environment of the organization should be prepared to accept the sustainability culture in procurement. For this to happen, the CSR and compliance policy of any organization are very vital.

Question-7: Does PGCB have any CSR and Ethical Codes of Conduct for the procurement and project management?

Table-11: CSR and Ethical Codes of Conduct in PGCB

Opinion of the respondents	Category of respondents					
	Design &QC dept.	Planning dept.	Projects dept.	Grid and system operation dept.	Suppliers' community	Consumers' community
Yes	0	0	0	0	0	0
Yes, partially	0	0	0	0	0	0
No	6	6	6	6	6	6

Actually PGCB Ltd. has not formed its CSR value and Ethical Codes of Conduct yet for its procurement and project management. This is an actual shortcoming for an organization in the third-world country like Bangladesh. The nation-wide awareness regarding the corporate responsibility for the social, ethical and environmental impacts of their activity has not grown enough yet. The government is taking the pressure to establish that culture. A real responsible behavior of any large corporate has a immense effect on the wellbeing of the society. This is an important feature of sustainable procurement also. In order to control the activities in the context of sustainability, PGCB Ltd. also needs to form its Corporate Social Responsibility (CSR) policy and Ethical Codes of Conduct.

5.4: Findings and Summary

Questionnaire no-2 shows that 100% of stakeholders (respondents) agree that the sustainability is of great importance for the procurement process of PGCB Ltd.

Questionnaire-3 shows that, 61% of the total respondents believe that PGCB's procurement and projects do not meet the needs of the organization and its stakeholders, without compromising the ability to continue to do so in future. That is, PGCB's procurement meets the organizational needs at the expense of some resources. Those procurement processes must deplete resources and do not comply perfectly with the sustainable procurement goals.

Questionnaire-4 shows that, 53% of the total respondents believe, PGCB's procurement and projects do not protect the economic security of the organization without negative environmental or social impacts. That is PGCB's procurement systems have negative impact on environmental and social aspects, which also differ with sustainability concepts and sustainable bottom lines.

Questionnaire-5 shows that, 67% of the total respondents believe, PGCB's policy for procurement and projects comply with international standards and labour laws.

Questionnaire no-6 shows that 83% of the total stakeholders (respondents) opine that international sustainable procurement standards and policies can be applied and implemented in case of the procurement process of PGCB.

Questionnaire-7 dictates that PGCB has not yet established its own CSR and Ethical Codes of Conduct to follow for the procurement practices and project management.

Those surveys and consensuses have also been evidenced by proper explanations, photos, pictures and some valid arguments of the respondents.

The summary can be drawn as below:

- PGCB Ltd. follows some international standards and international labor laws in black and white only. But those are not implemented and monitored properly.

- PGCB has no CSR and Ethical Codes of Conduct also.
- Therefore PGCB's procurement activities have some negative social and environmental impact.
- Moreover, PGCB's procurement systems have depleting effect on resources. The resources used are not fully re-newable.
- Therefore, PGCB's procurement policies and practices are not completely & perfectly sustainable yet, in the context of sustainable bottom line concept.
- However, sustainability is very important for PGCB and international standards, values and guidelines should be applied to make PGCB's procurement system more effectively & practically sustainable.

From the above surveys, it can be concluded that-

a) The globally adopted sustainable procurement practices and guidelines are applicable for the procurement processes of PGCB. (Research question -1, Are the globally adopted sustainable procurement practices & guidelines applicable for the procurement processes of PGCB?)
b) The existing procurement practices and policies of PGCB are not fully (100%) complied with sustainability aspects in the context of sustainable bottom lines. PGCB is trying to implement some international standards, environmental guidelines and labour laws; but the other issues of sustainable procurement have not yet addressed. (Research question no-2, To what extent the existing procurement practices and policies of PGCB are sustainable in the context of sustainable bottom lines (Triple bottom line))?

Chapter-6:
Conclusion and Recommendations

6.1 Sustainability Will Dominate the Future

There is no doubt that sustainability will dominate the future. Those who will be able to address it properly will be able to dominate in the field of development and control their fate.

PGCB is not the about the exception. It must have to be sustainable in its procurement, projects, operations and delivery.

This paper already reveals the present status and challenges of PGCB in case of sustainable procurement. Now in light of that, it is time to find out some ways to improve the position.

6.2 Some Proposals

Here are some proposals and recommendations regarding the sustainability issues of PGCB, which may be adopted to improve the procurement process and avoid the barriers and overcome the challenges in case of sustainable procurement:

- **KPI on Sustainability:** PGCB needs to set KPIs on sustainability. So it should set sustainability targets and objectives. KPIs can be set on Triple Bottom Line issues, such as, Economic performance, Environmental performance and Social and Ethical performance. Three types of performance measures for sustainability can be used:[51]
    - Management measures, reflecting procurement practices
    - Operational measures, focused on target outcomes of sustainability
    - Environmental condition measures, which can be used to inform strategy development
- **CSR values:** Corporate social responsibility (CSR) policy must be formed in accordance with sustainability issues and CSR values should be maintained. It is no longer acceptable that an organization continues to operate in isolation without considerations of its environments and its stakeholders. There is increasing demand for organizations for sensibility and accountability for their impacts on

[51] British Standards Institution

their stakeholders. Here lies the main value of CSR. The term CSR is generally used to describe a wide range of obligations that an organization may feel it has towards its secondary stakeholders, or the society in which it operates. So sometimes CSR is used interchangeably with sustainability.

- **Corporate vision and mission:** Sustainability values need to be incorporated in corporate vision and mission statement of PGCB.
- **Supervision of lower tiers:** In order to minimize the business and reputational risk, top-tier organization (PGCB) needs to 'drill-down' through the tiers of supply chain, monitoring policies, systems and performance to ensure that the end-to-end supply chain is well managed.
- **Evaluation of Suppliers:** During the evaluation of performance of suppliers, sustainability performance can be incorporated in EQC (Evaluation and Qualification Criteria) for supplier selection and awarding the contract.
- **Contract Management:** Contract management should be properly done with thorough and tight monitoring of sustainable performance criteria.
- **Whole Life Costing Method:** Whole life costing (WLC) or life cycle costing (LCC) is a sustainability criteria. WLC may be used to achieve a more complete picture of total costs of purchasing a good or service-rather than purchase price alone. It consists of planning cost, acquisition cost, operational and maintenance cost, disposal and end-of-life cost. WLC enables the realistic budgeting over the life of the asset. WLC is a good criterion for awarding the contract. Public sectors still are not prepared for incorporating WLC in contract awarding criteria. Day-by-day it should be developed. Now only 'Lowest price' criterion is used here. MEAT (most economically advantageous tender) is now-a-days considered the best method in public sectors.
- **Collaboration with Suppliers:** Collaboration with suppliers is a emerging issue. Collaborative initiative with suppliers can be taken to identify the sustainability issues and develop sustainability criteria. Inputs from suppliers will help much. It is also necessary to suppliers' performance management, suppliers' relationship management and supplier development program.
- **Proper compensation and rehabilitation policy:** Though PGCB follows "Electricity Act, 1910", now a new "Electricity Act, 2015" is waiting to be enacted. Its "Draft" is already prepared. The act should incorporate proper

compensation policy and procedures so that landowners and suffered people can get proper compensation. The more those acts and rules are people-oriented, the more it will help sustainable growth and development.

- **Underground Cable Network:** Instead of aerial transmission network, more emphasize should be given on underground cable network. It is adopted in developed countries. Of course, it will increase the cost of infrastructure. Similarly, instead of AIS (Air Insulated Substation), GIS (Gas Insulated Substation) can be established, though GIS has some cost concern and health hazard due to SF_6 leakage.
- **Preparing Sustainable Procurement Policy:** A sustainable procurement policy will align with and support the organization's commitment to procure all goods, services and works in a sustainable manner. This aims to integrate sustainability into all procurement activities. A simple sustainable procurement policy may include the following elements:
    - Introduction
    - Core guiding principles
    - Objectives and targets
- **Implementing Sustainable Procurement Policy:** Sustainable procurement policy implementation should include the following elements:
    - Stakeholder consultation and involvement
    - Obtaining stakeholder engagement and commitment
    - Identifying sustainable priorities
    - Setting targets and objectives
    - Allocating responsibilities for sustainable procurement

6.3 Establishing Sustainability Culture

Moreover, sustainability is not mere an issue of just implementing or incorporating some guidelines. Rather it is a culture. Sustainability concerns need to be embedded in company fabric also. Rearranging and modification of some cultural dimensions are also assessed here which will be necessary in order to bring the change.

Culture may be defined as 'the way we do things around here". Following measures can be adopted for growing sustainability culture in organizational environment:

1. Plan: Assessing the context and stakeholder needs, making sound business case and then planning for change the culture.
2. Mission and Vision: Keep the sustainability objectives in corporate mission and vision statement, so that, all members from top to bottom of the organization become aware of this.
3. Learning and training: Training is effective way of learning. So vital issues regarding sustainability and the organizational aspects can be learnt and communicated through training. Besides, seminars, symposiums, presentations may go a long way to build this culture.
4. Policy and procedures: A rigid policy should be formulated regarding the implementation of sustainable procurement methods and procedures.
5. Communication and participation: During policy formulation, it needs to ensure the participation of maximum number of stakeholders. After policy formulation, this needs to be communicated effectively with all employees and stakeholders.
6. Implementation of policy: It needs supporting systems and processes to implement the policy.
7. Review and feedback: Periodic feedback should be obtained from various types of stakeholders and that policy should be reviewed time to time for further development.

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Thank You