



Republic of Ghana

MINISTRY OF ENERGY

Ghana Energy Sector Recovery Program – Program for Results (P173258)



Environmental and Social Management Framework

**Investment Project Financing under Program-for-
Results; Financing for ECG**

May 2024

LIST OF ACRONYMS

ACEP	Africa Centre for Energy Policy	LPG	Liquefied Petroleum Gas
AIDS	Acquired Immunodeficiency Syndrome	LVD	Land Valuation Division
ARAP	Abbreviated Resettlement Action Plan	MCC	Metering Control Centre
BCs	Beneficiary Communities	MDAs	Ministries, Departments and Agencies
BSP	Bulk Supply Points	MMDAs	Metropolitan, Municipal and District Assemblies
CHPS	Community-based Health Planning and Services	MoEn	Ministry of Energy
CMS	Customer Management System	MRH	Ministry of Roads and Highways
CR	Compensation Report	MW	Megawatts
DTs	Distribution Transformers	NEDCo	Northern Electricity and Distribution Company
E&S	Environmental and Social	NGO	Non-Governmental Organization
EA	Environmental Assessment	NITS	National Interconnected Transmission System
EC	Energy Commission	NPA	National Petroleum Authority
ECG	Electricity Company of Ghana	PAP	Project Affected Person
EEE	Electric Electronic Equipment	PCB	Polychlorinated biphenyls
EHS	Environmental Health and Safety	PDO	Program's Development Objectives
EHS&S	Environmental, Health, Safety and Sustainability	PEA	Preliminary Environmental Assessment
EMF	Electric and Magnetic fields	PforR	Program-for-Results
EPA	Environmental Protection Agency	PHC	Population and Housing Census
ESF	Environmental and Social Framework	PIU	Project Implementation Unit
ESHS	Environment and Social, Health and Safety	PLWHIV	Persons Living with HIV
ESIA	Environmental and Social Impact Assessment	PPE	Personal Protective Equipment
ESMF	Environmental and Social Management Framework	PURC	Public Utilities Regulatory Commission
ESMP	Environmental and Social Management Plan	PWD	Persons with Disability
ESMS	Environmental and Social Management System	RAP	Resettlement Action Plan
ESPM	Energy Service and Performance Monitoring	RMTs	Rugged Mobile-Tablets
ESRC	Environmental and Social Risk Classification	RoW	Right of Way
ESSs	Environment and Social Standards	RPP	Revenue Protection Program
ETU	Electricity Transmission Utility	SEA	Sexual Exploitation and Abuse
GESRP	Ghana Energy Sector Recovery Program	SEAAF	Sustainable Energy for All Acceleration Framework
GESTIP	Ghana Energy Sector Transformation Initiative Project	SEITA	Social, Environmental Impact Technology Assessment
GNFS	Ghana National Fire Service	SEP	Stakeholder Engagement Plan
GoG	Government of Ghana	SH	Sexual Harassment
GRM	Grievance Redress Mechanism	SHE	Safety, Health and Environment
GSIP	Gender and Social Inclusion Policy	SNEP	Strategic National Energy Plan
GSMA	Ga South Municipal Assembly	SOP	Standard Operational Procedure
GWh	Gigawatt hours	SPC	Statutory Planning Committee
H&S	Health and Safety	STI	Special Load Tariff
HIV	Human Immunodeficiency Virus	SWCD	Social Welfare and Community Development
HSSE	Health, Safety, Security and Environment	SWOT	Strength, Weakness, Opportunity and Threat
IAIA	International Association for Impact Assessment	TA	Technical Assistance
IES	Institute of Environmental Studies	TaMA	Tamale Metropolitan Assembly
IPF	Investment Project Financing	UNFCCC	United Nations Framework Convention on Climate Change
ISO	International Organization for Standardization	VRA	Volta River Authority
IT	Information Technology	WBG	World Bank Group
LI	Legislative Instrument	WEEE	Waste Electrical and Electronic Equipment
LV	Low Voltage	WHO	World Health Organisation

EXECUTIVE SUMMARY

The World Bank intends to support the Government of Ghana's (GoG) Energy Sector Recovery Program (ESRP) and the National Liquefied Petroleum Gas (LPG) Promotion Program (NLPGPP). The Program will be financed through a Program-for-Results Financing (PforR), with some components to be financed under an Investment Project Financing (IPF). The Program's Development Objective (PDO) is to improve the financial viability of the electricity distribution sector in Ghana and to increase access to clean cooking solutions. This Environmental and Social Management Framework (ESMF) covers components of the program that will be financed under the IPF.

The proposed IPF activities will generally be implemented at the national level. One part of the IPF component will finance priority investments defined in Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company's (NEDCo) Performance Improvement Programs (PIPs) aimed at the reduction of technical and commercial losses. Specifically, this component will finance the procurement and installation of smart pre-payment meters (along with associated software), enhancement to meter management systems; a standard commercial information system (CIS), and other associated ICT systems for improving operational efficiency of ECG. The other part of the IPF component will finance Technical Assistance (TA) to support project implementation, as well as the implementation of the ESRP and NLPGPP with the aim of filling the gaps identified in the technical, fiduciary and safeguards assessments of the Project.

In terms of the implementation arrangements, the second sub-component of the IPF will be implemented by the Ministry of Energy's (MoEn) Program Coordination Unit (PCU), while the first sub-component of the IPF will be implemented by ECG's Project Implementation Unit (PIU). ECG will be the implementing agency that is responsible for the management of funds allocated for the sub-component (i.e., for the metering), as well as for the procurement and installation of the meters, and for management of Environmental and Social (E&S) risks associated with the project. A dedicated Project Coordinator, Procurement Specialist, E&S Safeguards Specialist, and a Financial Management Specialist will be part of the PIU at ECG. ECG will procure pre-payment meters for non-strategic MDAs in NEDCo's area.

However, due to the need to streamline procurement processes and ensure that the activities are executed satisfactorily, ECG has signed a Memorandum of Understanding (MoU) with NEDCo to, on behalf of NEDCo, procure and install pre-payment meters for NEDCo's customers, including some non-strategic Ministries, Departments, and Agencies (MDAs) within NEDCo's areas of operation. A breakdown of the project activities to be implemented by ECG and NEDCo towards technical and commercial loss reduction include the following:

- Installation of smart load limiters for lifeline customers.
- Replacement of meters older than 10 years.
- Replacement of residential meters that are non-MMS (Meter Management System) compliant.
- Replacement of Ministries, Department, and Agencies (MDAs) meters to smart and MMS compliant.

- Replacement of all Electronic Distance Meter Instrument (EDMI) meters for Automated Meter Reading (AMR) and High consuming customers with MMS compliant smart post-paid meters.

Purpose of the Environmental and Social Management Framework

The World Bank requires the Borrower to prepare an Environmental and Social Management Framework (ESMF) to institute a general risk identification framework for assessing and managing the potential environmental and social (E&S) risks associated with the IPF components,. The project design and implementation will be guided by the World Bank Environmental and Social Framework (ESF), with the following Environmental and Social Standards (ESSs) considered relevant to the assessment process:

- ESS1: Assessment and management of environmental and social risks and impacts;
- ESS2: Labour and working conditions;
- ESS3: Resource efficiency and pollution prevention and management;
- ESS4: Community health and safety;
- ESS10: Stakeholder engagement and information disclosure.

The ESMF also complies with the Environmental Assessment Regulations (LI 1652) of Ghana. Under the ESF, the Environmental and Social Risk Classification (ESRC) for the project is moderate.

The specific objective of the ESMF is to assess as well as provide measures to avoid, minimize, or mitigate the E&S risks and impacts of project activities under the IPF component (i.e., the project). Relevant plans will also be developed for managing and monitoring the mitigation measures in the ESMF. The ESMF will further establish procedures to screen and assess potential impacts and risks, manage and monitor mitigation measures for the identified project components/activities under the IPF. The ESMF will address issues related to cumulative risks, potential opportunities, and synergies, and outline the institutional responsibilities relating to the general management for sustainable implementation of project activities. The ESMF also includes a Labour Management Procedure for managing labour and working conditions in line with ESS2.

Applicable Policy, Regulatory and Institutional Frameworks

In line with the Environmental Assessment (EA) Regulations, 1999 (LI 1652) the proposal was duly registered with the Environmental Protection Agency (EPA) and the screening decision of the EPA required the preparation of an Environmental and Social Management Framework (ESMF).

The key policy, regulatory and institutional requirements reviewed and applied in the assessment, mitigation and management plans included the following:

- National environmental policy and requirements:
 - National Environmental Policy, 2012
 - Environmental Protection Agency Act, 1994 (Act 490);
 - Environmental Assessment Regulations, 1999 (LI 1652);
 - Ghana National Climate Change Policy, 2013;
 - Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917); and

- Hazardous, Electronic and Other Wastes, Control and Management Regulations, 2016.
- Energy sector policy and related requirements:
 - Energy Commission Act, 1997 (Act 541);
 - Public Utilities Regulatory Commission, 1997 (Act 538);
 - Electricity Supply and Distribution (Technical and Operational) Rules, 2005 (LI 1816);
 - Electricity Transmission (Technical, Operational and Standards of Performance) Rules, 2008 (LI 1934);
 - Electricity Supply and Distribution (Standards of Performance) Regulations, 2008 (LI 1935);
 - Electricity Regulations, 2008 (LI 1937);
 - Sustainable Energy for All Action Plan, 2015;
 - National Energy Policy, 2010;
 - Strategic National Energy Plan (SNEP), 2006;
 - Electrical Wiring Regulations, 2011 (LI 2008); and
 - National Electricity Grid Code, 2009.
- Local governance and planning requirements:
 - Local Governance Act, 2016 (Act 936); and
- National labour, safety and health requirements:
 - Factories, Offices and Shops Act, 1970 (Act 328);
 - National Health Policy 2020;
 - Public Health Act, 2012 (851);
 - National Workplace HIV/AIDS Policy;
 - National HIV/AIDS and STI Policy, 2013;
 - Imposition Restriction Act, 2020 (Act 1012)
 - National Employment Policy, 2014;
 - Labour Act, 2003 (Act 651);
 - Workmen's Compensation Law, 1987 (PNDCL 187);
 - Ghana National Fire Service Act, 1997 (Act 537)
 - Fire Precaution (Premises) Regulations, 2003 (LI 1724); and
 - Control and Prevention of Bushfires Act, 1990 (PNDCL 229).
- Environmental quality standards:
 - Ghana Standard on Health Protection - Requirements for Ambient Noise Controls (GS 1222:2018); and
 - Ghana Standard on Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019).
- Requirements for gender and social protection:
 - National Gender Policy, 2015;
 - Children's Act, 2016 (Act 937);
 - Domestic Violence Act, 2007 (Act 732);
 - Ghana National Social Protection Policy, 2015;
 - Domestic Violence Act, 2007 (Act 732); and
 - Affirmative Action Bill (drafting began in 2011).
- International requirements and safeguards:
 - The World Bank Environmental and Social Framework (ESF), 2016;
 - The World Bank Group General Environmental Health and Safety Guidelines,

- 2007; ○ Open Government Partnership (OGP), 2011; and
- Extractive Industries Transparency Initiative (EITI), 2003.
- Areas of difference – Ghana EA and the World Bank ESF:
 - Core requirements of the ESS and the Ghana laws, policies and legislative instruments; and
- Other relevant institutions:
 - State Interest and Governance Authority; ○ National Petroleum Authority.

Environmental and Social Baseline Information

Given that the project has a national scope, assessment of the environmental and socioeconomic baseline conditions covered the following areas of national scope:

- Geographical location of Ghana;
- Physical environment - ○ Climate (rainfall, temperature and humidity);
 - Topography and landscape; ○ Drainage and water resources; ○ Water quality; ○ Geology; ○ Soils;
- Biological environment - ○ Vegetation/flora; ○ Fauna;
- Socio-economic and cultural environment - ○ Population; ○ Economic activities; ○ Road infrastructure;
- Electric power generation and distribution in Ghana
 - ○ Electricity generation; ○ Access to electricity; and
- E-waste handling, processing and recycling facilities in Ghana.

Ghana lies along the Gulf of Guinea in West Africa, and covers an area of about 239,000km². It is classified into four main climatic regions - the South-western Equatorial Climatic Zone, Dry Equatorial Climatic Zone, Wet-semi–Equatorial Climatic Zone and Tropical Continental (savannah) Climatic Zone. The country is dominated by Paleoproterozoic Birimian rocks.

Provisional results from the 2021 Population and Housing Census by the Ghana Statistical Service puts the country's population at 30.8 million. About two-thirds (67.6%) of the population are employed. About 85% of the population has access to electricity per the 2020 statistics of the Energy Commission. This makes Ghana one of the African countries that are most likely to achieve 100% universal access by 2030.

The installed electricity generation capacity for the country increased from 1,652 MW in 2000 to 5,172 MW in 2019, representing an annual average growth rate of 6.2%. The total electricity generation increased more than two-fold, from 7,224GWh in 2000 to 18,189GWh in 2019, amounting to an average annual increase of 5%. Also, 8,067GWh of electricity transmitted in

2000 surged to 17,887GWh in 2019. Yet, transmission losses incurred over the period increased from 229 GWh (2.8% of the total electricity transmitted) in 2000 to 844 GWh (4.7% of the total electricity transmitted) in 2019. An average of 4% of electricity was lost in the period between 2000 and 2019.

Stakeholder Involvement

Stakeholders were consulted to ensure open, inclusive, and participatory involvement in the assessment processes, and for an opportunity for feedback on project impacts and other concerns. Stakeholders engaged included:

- Ministry of Energy (MoEn);
- Northern Electricity and Distribution Company (NEDCo)
- Environmental Protection Agency (EPA);
- Energy Commission (EC);
- Selected Metropolitan, Municipal and District Assemblies (MMDAs);
- Electricity Company of Ghana (ECG);
- Public Utilities Regulatory Commission (PURC);
- Institute of Environmental Studies (IES);
- National Petroleum Authority (NPA);
- Traditional Authorities;
- Green Advocacy Ghana (GreenAd); and
- Africa Centre for Energy Policy (ACEP).

Key findings from the E&S capacity needs assessment included:

- E&S capacity building for ECG, NEDCo, NPA, EC and the MMDAs is required;
- The EPA-IES can design customised E&S safeguards training for the MMDAs to support energy sector institutions; and
- The EPA faces challenges monitoring the energy sector projects due to inadequate staff and resources in the regions/districts.

Assessment of Potential Impacts and Mitigation Measures

The main impacts and risks assessed related mainly to potential improper handling and disposal of large volumes of generated e-waste. The assessment showed the impacts and risks to be of low to moderate significance, as reflected in the Environmental Assessment (EA) screening criteria developed, which placed most of the project activities/sub-subjects at the Initial Assessment and Preliminary EA levels. This is also consistent with the Environmental and Social Risk Classification (ESRC) for the project as moderate under the World Bank ESF. The key impacts and risks included:

1. Occupational health and safety risks;
2. Community health and safety risks;
3. Waste handling and disposal impacts (including e-waste);
4. Temporary localized power outages;
5. Potential confrontation and sabotage by aggrieved customers;
6. Risks of sexual exploitation, abuse and harassment;
7. Gender and labour related issues;
8. Potential risk of transmission of COVID-19;
9. Risk of inefficient ESMF implementation and outcomes; and

10. Noise and air pollution from heavy duty vehicles that will be used in operations;
11. electrical and fire hazards to homes / communities during connection of customers to distribution transformers and feeders;
12. elite capture and exclusion of vulnerable groups from distribution of meters
13. inadequate stakeholder engagement and weak conflict resolution mechanism
14. Sexual harassment (SH) and sexual exploitation and abuse during capacity building activities and/or during replacement of meters and connection of customers to transformers

The mitigation provisions to ensure environmental soundness, social acceptability, health and safety protection and sustainable project implementation included:

1. Occupational health and safety measures;
2. Community health and safety measures;
3. Waste handling and disposal measures;
4. Temporary localized power outages management measures;
5. Public involvement in project decision-making;
6. Sexual exploitation and harassment prevention measures
7. Gender and labour safeguards measures;
8. HIV prevention measures
9. Teenage pregnancy prevention measures;
10. COVID-19 prevention measures;
11. E&S capacity building and systems requirements.
12. Measures to prevent elite capture and secure inclusion of vulnerable groups

A summary of impacts/risks of the project and the corresponding mitigation provisions are given in Table 1 below.

Table 1 **Summary of Impacts and Mitigation Measures**

Potential Impacts/ Risks	Nature of Risk/Impacts	Mitigation Measures
1. Occupational health and safety risks	• Electrocution from energized service lines and meter parts • Fall from height • Exposure to toxic substances in electronic and electrical wastes • Risk of electrical fires and its impacts	• Screening to ascertain workers fitness with respect to the job requirements before employment. • Provision of Personal Protection Equipment (PPE) and enforcing usage (plastic hand gloves, high visible clothing, etc.). • Developing Contractor's Environmental and Social Management Plan (C-ESMP) that includes Occupational Safety and Health Plan and training workers on the standard working procedures • Sensitization and training of workers on e-waste handling. • Workers to observe a minimum distance of 12m from erected poles during stringing. • Provision of periodic occupational health and safety education to workers.
		• Ensuring appropriate working procedures and standards to prevent substandard installation. • Procuring standard materials for meter installation.

2. Community health and safety impacts	• Electrocution • Electrical fires	• Ensuring that wiring and installation of meters meet industry best practices. • Ensuring that all live parts are concealed and inaccessible to the customer. • Ensuring procurement of standard meters and accessories.
3. Waste handling and disposal impact	• Improper disposal of waste electrical and electronic equipment (WEEE) such as power switches, inverters, converters, etc • Indiscriminate refuse disposal/ littering by workers • Workers engaging in open defecation • Litter/plastics collecting water and providing mosquito breeding places	• Auctioning of discarded WEEE to EPA accredited recyclers. • Provide waste segregation bins. • Provide mobile toilets. • Raise health awareness on risks associated with littering and open defecation.
4. Temporary localized power outages	• Temporary local power outages may be cause by the procedural requirement to install meters on de-energized lines. These outages will be restricted to areas that meters are being replaced. •	• Advance outage notification to customers • Improving work procedures to ensure efficiency and time management. • Working during less productive hours of the day
5. Potential confrontation and sabotage by aggrieved customers	• Customers could resist replacement of obsolete prepayment and post-paid meters	• Stakeholder engagement, awareness creation and sensitization of community members on the replacement of obsolete prepayment and post-paid meters. • Providing functional GRMs, to facilitate speedy resolution of customer complaints
6. Risks of sexual exploitation and abuse and sexual harassment	• Influx of workers in project communities could lead to sexual exploitation and abuse and sexual harassment, especially against uneducated women who may lack the necessary project information and might be lured into undesired sexual activities by the ECG/NEDCo technicians/contractor's workers, who might ask for sexual favours before the meters are installed in the homes of victims. • Project-level factors include likely interaction between project staff/contractors and project beneficiaries; male project staff/workers and female staff to be recruited under the ECG PIU and MoEn PCU and consultants, contractors and workers to be engaged for various project activities. These women could potentially face sexual abuse, discrimination and sexual harassment issues.	• Zero-tolerance policy to sexual exploitation and abuse or sexual harassment. • By requiring contractors and workers of ECG to sign a workers' Code of Conduct including prohibition and sanctions on GBV. • A GBV Action plan proportionate to the GBV risks identified during project preparation may also be prepared prior to project implementation. • Establishing functional GRMs, with adequate provision for referral and handling of SEA/ SH cases, such as a GBV service provider, given that the general GRM may not be appropriate for reporting or handling the sensitivities associated with SEA/SH cases.

7. Gender and labour related issues	• Marginalisation of women and other vulnerable groups in employment • Inadequate and dedicated sanitary facilities for use by female staff at the ECG'S PIU, MoEn's PCU, and female workers of contractors	Labour management plan to include: • Payment of fair and adequate compensation • Promotion of collective bargaining agreement • Provision of safe working environment for staff, and dedicated facilities for women in the workplaces. • Incorporation of gender equality mechanism in workplace policies and procedures
8. Potential risk of spread of HIV	• High mobility • Male dominated profession • Stress of working and living conditions • Lack of information • Poverty	• Awareness creation on HIV and AIDS • Incorporation of HIV prevention clauses in workers' contracts • HIV status will not affect employment or dismissal • Intolerance of discrimination and stigmatization against workers with real or perceived HIV status • Confidentiality and care of workers' HIV status
9. Potential risk of teenage pregnancy	• High disposable income of workers could lure teenage girls from low-income communities to engage in sexual activity • Establishment of workplace acquaintance potentially leading to sexual relations	• Develop workplace policy to include suspension of workers who have sexual relations with under aged persons • Awareness creation among workers • Preventive clauses incorporated in workers' contracts barring any form of sexual relations with minors / teenagers
10. Potential risk of transmission of COVID-19	• Non-compliance with COVID-19 protocols • Unhygienic personal habits • Lack of knowledge	• Awareness creation • Implementation of COVID protocols • Routine disinfection of objects and surfaces
11. Risk of inefficient ESMF implementation and outcomes	• Lack of E&S awareness and commitment on the part of management • Absence of clear E&S policy and institutional systems • Training tour placements/capacity building opportunities going to high senior personnel instead of deserving E&S technical officers • Absence of E&S safeguards capacity of personnel in relevant departments • Potential weak enforcement resulting in poor ESMF implementation	• E&S capacity building and institutional systems • Determination of training tour beneficiaries (in terms of departments and positions) in advance, with intended purpose and expected corresponding deliverables after the training.
12. Potential landtake and property impacts	• Creation of right-of-way for installation of distribution poles and transformers, etc.	• Principles to properly acquire the ROW provided in the Abridged Resettlement Framework.

E&S Capacity Building and System Requirements

Situational analysis of institutional E&S safeguards capacity, policy and systems was conducted for ECG, NEDCo, PURC, EC, NPA, and MMDAs (Ga South Municipal Assembly and Tamale Metropolitan Assembly) for the purpose of identifying and building requisite E&S capacities and to facilitate the establishment of functional E&S systems in the energy sector institutions. It was also to facilitate the effective implementation of this ESMF, and to enhance E&S performance generally as a standard institutional best practice in Ghana. The areas covered were:

- Existing E&S safeguards capacity, policy and systems;

- E&S safeguards capacity and systems gap identification; and • E&S capacity building and functional system needs (Table 2).

Table 2 Capacity Building Needs of Institutions

Institution (Unit/Department)	Capacity Building Needed
Northern Electricity Distribution Company (ESHS)	• Training areas: ◦ World Bank ESF (ESSs) ◦ National Environmental Regulations ◦ Review and implementation of Stakeholder Engagement Plan (SEP) • EPA-IES customized training courses • IAIA conference and pre-conference course • High-level sensitization program for top management personnel on E&S safeguards
Electricity Company of Ghana (SHE)	
Energy Commission (SEITA)	
National Petroleum Authority (HSSE)	
Public Utilities Regulatory Commission (ESPM)	
MMDAs	• Training areas: ◦ World Bank ESF (ESSs) ◦ National Environmental Regulations ◦ Review and implementation of Stakeholder Engagement Plan (SEP) • EPA-IES customized training courses
• Tamale Metropolitan Assembly (SWCD)	
• Ga South Municipal Assembly (WD and DPU)	

Environmental and Social Management Plan

The effective implementation of the mitigation measures for the project components/subprojects depend to a large extent on the development of environmental and social management plan. The following management plans have been defined to address the evaluated impacts:

1. Occupational health and safety plan;
2. Community health and safety plan;
3. Waste handling and disposal plan;
4. SEA and SH prevention plan;
5. Labour management plan; and

ESMF Implementation Plan

The respective roles expected of the project implementers and that of the other stakeholders have been outlined in the implementation plan. The key areas of the ESMF implementation plan includes:

- Institutional roles and responsibilities;
- E&S screening and assessment procedures;
- Information dissemination and disclosure measures; • Environmental and social monitoring and reporting; and
- ESMF implementation budget.

Information dissemination to stakeholders will be expected to deploy various communication tools including:

- Meetings;
- Posters;
- E-mails;

- Social media (e.g.:WhatsApp; and LinkedIn)
- Phone communication.

After publication/submission of the draft report, a 21-day public notice will be served through newspaper advertisement to indicate where copies of the report could be accessed to enable the public provide comments towards review of the ESMF by the EPA. The final report will be distributed to relevant sector institutions and MMDAs for public information. The document will also be disclosed electronically on EPA's website.

Monitoring would be a key component for reporting on the ESMF during project implementation. Monitoring will cover two key areas - compliance monitoring and impact monitoring.

The estimated budget for implementation of the ESMF is USD 618,540. This budget covers:

- Costs for workshop and training for MoEn and ECG to effectively execute roles as outlined in the ESMF
- Costs for preparation of Initial Assessments, Preliminary Environmental Assessments (PERs), and ESISs (i.e. total consultancy costs for individual activities); and
- Costs for institutional E&S safeguards capacity building (for the other energy sector institutions).

TABLE OF CONTENTS

LIST OF ACRONYMS	i
EXECUTIVE SUMMARY	ii
TABLE OF CONTENTS	xii
1.0 INTRODUCTION	1
1.3 Purpose of the Environmental and Social Assessment.....	2
1.4 Methodology for the ESMF	2
1.5 Structure of Report	3
2.0 POLICY, REGULATORY AND INSTITUTIONAL FRAMEWORKS	3
2.1 National Environmental Policy and Requirements	4
2.1.1 National Environmental Policy	4
2.1.2 Environmental Protection Agency Act	4
2.1.3 Environmental Assessment Regulations	5
2.1.4 Fees and Charges (Amendment) Instrument.....	5
2.1.5 National Climate Change Policy	5
2.1.6 Hazardous and Electronic Waste Control and Management Act	5
2.1.7 Hazardous, Electronic, and Other Wastes Control and Management Regulations	6
2.1.8 Technical Guidelines on Environmentally Sound E-Waste Management	6
2.2 Energy Sector Policy and Related Requirements.....	6
2.2.1 Energy Commission Act	7
2.2.2 Public Utilities Regulatory Commission.....	7
2.2.3 Electricity Supply and Distribution (Technical and Operational) Rules.....	7
2.2.4 Electricity Transmission (Technical, Operational and Standards of Performance) Rules	8
2.2.5 Electricity Supply and Distribution (Standards of Performance) Regulations.....	8
2.2.6 Electricity Regulations	8
2.2.7 Sustainable Energy for All Action Plan	9
2.2.8 National Energy Policy	9
2.2.9 Strategic National Energy Plan	9
2.2.10 Electrical Wiring Regulations.....	9
2.3 National Labour, Safety and Health Requirements	9
2.3.1 Factories, Offices and Shops Act.....	10
2.3.2 National Health Policy	10
2.3.3 Public Health Act.....	10
2.3.4 National Workplace HIV/AIDS Policy.....	10
2.3.5 National HIV/AIDS and STI Policy	10
2.3.6 Imposition Restriction Act.....	11
2.3.7 National Employment Policy	11
2.3.8 Labour Act	11
2.3.9 Workmen's Compensation Law.....	11
2.3.10 Ghana National Fire Service Act	12
2.3.11 Fire Precaution (Premises) Regulations	12
2.3.12 Control and Prevention of Bushfires Act.....	12
2.4 Environmental Quality Standards.....	12
2.4.1 Ghana Standard on Health Protection - Requirements for Ambient Noise Controls.....	12
2.4.2 Ghana Standard – Requirements for Ambient Air Quality	13
2.5 Requirement on Gender and Social Protection	13
2.5.1 National Gender Policy	13
2.5.2 Children's Act	14
2.5.3 Ghana National Social Protection Policy.....	14

2.5.4 Domestic Violence Act	14
2.4.5 Affirmative Action Bill.....	15
2.4.6 Persons with Disability Act.....	15
2.5 International Requirements and Safeguards.....	15
2.5.1 World Bank Environmental and Social Framework	15
2.5.2 World Bank Group General Environmental Health and Safety Guidelines.....	16
2.5.3 Open Government Partnership.....	16
2.5.4 Extractive Industries Transparency Initiative	16
2.6 Comparison of the World Bank ESF with National Requirements.....	17
2.7 Other Relevant Institutions.....	23
2.7.1 State Interest and Governance Authority	23
3.0 PROJECT DESCRIPTION	24
3.1 Project Overview	24
3.2 ECG's Commercial Loss Reduction Project	24
3.2.1 Installation of Smart Load Limiters for Lifeline Customers.....	25
3.2.2 Replacement of Meter Older Than 10 Years	25
3.2.3 Replacement of Residential Meters That are non-MMS (Meter Management System) Compliant	25
3.2.4 Installation of Prepayment Meters to 11,120 ECG non-SLT non-strategic MDAs	25
3.2.5 Replacement of all Electronic Distance Meter Instrument (EDMI) meters for Automated Meter Reading (AMR) and High consuming customers with MMS compliant smart post-paid meters.....	26
4.0 ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE CONDITIONS	26
4.1 Location.....	27
4.2 Physical Environment.....	27
4.2.1 Climate (Rainfall, Temperature and Humidity)	27
4.2.2 Topography and Landscape	29
4.2.3 Drainage and Water Resources	31
4.2.4 Water Quality.....	32
4.2.5 Geology.....	32
4.2.6 Soils.....	33
4.3 Biological Environment	34
4.3.1 Vegetation/Flora.....	34
4.3.2 Fauna.....	35
4.4 Socio-economic and Cultural Environment	36
4.4.1 Population	36
4.4.2 Economic Activity	39
4.4.3 Road Infrastructure	40
4.5 Electric Power Generation and Distribution in Ghana	40
4.5.1 Electricity Generation	40
4.5.2 Access to Electricity.....	42
4.6 E-waste Handling and Recycling Facilities in Ghana	43
5.0 STAKEHOLDER ENGAGEMENT.....	46
5.1 Purpose of Stakeholder Engagement.....	46
5.2 Stakeholder Engagement Methodology	46
5.2.1 Stakeholder Identification.....	46
5.2.2 Stakeholder Notifications and Engagement Planning.....	47
5.2.3 Engagement Issues and Guides.....	48
5.3 Stakeholder Engagement Highlights	48

6.0 ASSESSMENT OF POTENTIAL IMPACTS AND RISKS.....	49
6.1 Introduction	49
6.2 Methodology for Assessing and Ranking of Potential Impacts	50
6.3 Beneficial Impacts.....	52
6.3.1 Efficient and Reliable Supply of Power.....	52
6.3.2 Boost Local Economies	53
6.3.3 Local Employment Opportunities.....	53
6.3.4 Job Opportunities to Suppliers and Contractors.....	53
6.3.5 Improvement in Health Service Delivery	53
6.3.6 Enhancement in Teaching and Learning.....	54
6.4 Potential Adverse Risks and Impacts	54
6.4.1 Occupational Health and Safety Risks.....	54
6.4.2 Community Health and Safety Risks	56
6.4.3 Waste Handling and Disposal Impacts	56
6.4.4 Temporal Localized Power Outages	57
6.4.5 Potential Confrontation and Sabotage by Aggrieved Customers.....	57
6.4.6 Risks of Sexual Exploitation, Abuse and Harassment	58
6.4.7 Gender and Labour Related Issues.....	58
6.4.8 Potential Risk of Spread of HIV	58
6.4.9 Potential Risk of Teenage Pregnancy	59
6.4.10 Potential Risk of Transmission of COVID-19	59
6.4.11 Risk of Inefficient ESMF Implementation and Outcomes.....	60
7.0 ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES	63
7.1 Occupational Health and Safety Measures.....	63
7.2 Community Health and Safety Measures	63
Electrocution.....	65
7.3 Waste Handling and Disposal Measures	65
7.4 Temporal Localized Power Outages	66
7.5 Public Involvement in Project Decision Making.....	66
7.6 Sexual Exploitation and Harassment Prevention Measures	66
7.7 Gender and Labour Safeguards	67
7.8 HIV Prevention Measures	68
7.9 Teenage Pregnancy Prevention Measures	69
7.10 COVID-19 Prevention Measures	69
7.11 E&S Capacity Building and System Requirements	69
8.0 E&S CAPACITY BUILDING AND SYSTEM REQUIREMENTS	70
8.1 Existing E&S Safeguards Capacity, Policy and Systems.....	70
8.1.1 Electricity Company of Ghana.....	70
8.1.2 Northern Electricity Distribution Company.....	71
8.1.3 Ministry of Energy	72
8.1.4 Public Utilities Regulatory Commission.....	72
8.1.5 Energy Commission.....	73
8.1.6 National Petroleum Authority.....	73
8.1.7 Metropolitan, Municipal District Assemblies	74
8.2 E&S Capacity Building and Functional System Needs.....	75
8.2.1 Electricity Company of Ghana.....	75
8.2.2 Northern Electricity Distribution Company.....	75
8.2.3 Ministry of Energy	76

8.2.4 Public Utilities Regulatory Commission.....	77
8.3.5 Energy Commission.....	77
8.3.6 National Petroleum Authority.....	78
8.3.7 Metropolitan, Municipal and District Assemblies	78
9.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN	79
10.0 ESMF IMPLEMENTATION PLAN.....	86
10.1 Institutional Roles and Responsibility.....	86
10.1.1 Role of Ministry of Energy	86
10.1.2 Role of ECG.....	86
10.1.3 Role of Environmental Protection Agency	86
10.1.4 Role of MMDAs	87
10.1.5 Role of Chiefs/Traditional Authorities of catchment communities	87
10.1.6 Role of Third-Party Contractors	87
10.2 E&S Screening and Assessment Procedure	88
10.3 Information Dissemination and Disclosure Measures.....	88
10.4 Environmental and Social Monitoring and Reporting.....	89
10.4.1 Compliance Monitoring	89
10.4.2 Impact Monitoring	90
10.5 ESMF Implementation Budget.....	90
10.5.1 Estimated Budget for ESMF Disclosure and Implementation	90
10.5.2 Estimated Budget for E&S Assessment Preparation	91
10.5.3 Estimated Budget for Institutional E&S Safeguards Capacity Building.....	91
REFERENCES	93
APPENDICES	94

LIST OF FIGURES

Figure 4. 1 Spread of Climate Change Vulnerabilities in specific localities in Ghana	29
Figure 4. 2 Physiographic Regions of Ghana	30
Figure 4. 3 Geological map of Ghana	33
Figure 4. 4 Map of Protected Areas in Ghana	36
Figure 4. 5 Population Distribution by Region (GSS, 2021)	37
Figure 4. 6 Electricity Consumption by Sector - 2000 & 2019	43
Figure 4. 7 Proportion of Population with Access to Electricity	43
Figure 4. 8 Access to Electricity (% of population) – Ghana (World Bank website)	44
Figure 4. 9 Recycling and Disposal Practices	45

LIST OF TABLES

Table 2. 1 Requirements for Ambient Noise Control	13
---	----

Table 2. 2	Requirements for Ambient Air Quality – Maximum Limit for 24 Hours	13
Table 2. 3	Summary of the World Bank ESSs Considered in the ESMF	16
Table 2. 4	Comparison Between the ESF Standards and the Relevant Ghanaian Legislations .	18
Table 4. 1	Climate Change Risk in the Different Ecological Zones of Ghana	29
Table 5. 1	Categorisation of Stakeholders	47
Table 5. 2	Stakeholder Notification	48
Table 5. 3	Stakeholder Engagement Schedule	48
Table 5. 4	Major Highlights from Engagements	49
Table 9. 1	Entitlement Matrix	Error! Bookmark not defined.
Table 10. 1	Occupational Health and Safety (OHS) Plan	82
Table 10. 2	Community Health and Safety Plan	83
Table 10. 3	Waste Handling and Management Plan	84
Table 10. 4	Air Quality Control Plan	Error! Bookmark not defined.
Table 10. 5	Wildfire Prevention and Control Plan	Error! Bookmark not defined.
Table 10. 6	Traffic Safety and Accident Prevention Plan	Error! Bookmark not defined.
Table 10. 7	Noise and Vibration Reduction Plan	Error! Bookmark not defined.
Table 10. 8	SEA/SH and Gender Based Violence Prevention Plan	84
Table 10. 9	Labour Management Plan	85
Table 10. 10	Elite Capture of Training Tour Prevention Plan	85
Table 11. 1	Estimated Budget for ESMF Disclosure and Implementation	92
Table 11. 2	Estimated Budget for E&S Assessment and RAP Preparation	93
Table 11. 3	Estimated Budget for Institutional E&S Safeguard Capacity Building	93

1.0 INTRODUCTION

The World Bank intends to support a subset of the Government of Ghana's (GoG) Energy Sector Recovery Program (ESRP) and the National Liquefied Petroleum Gas (LPG) Promotion Program (NLPGPP). The Program will be financed through a Program-for-Results Financing (PforR), with some components to be financed under an Investment Project Financing (IPF). The Program's Development Objective (PDO) is to improve the financial viability of the electricity distribution sector in Ghana and to increase access to clean cooking solutions. This Environmental and Social Management Framework (ESMF) covers components of the program that will be financed under the IPF.

The proposed IPF component which is in two (2) parts, will generally be implemented at the national level. The first sub-component will finance priority investments defined in Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company's (NEDCo) Performance Improvement Programs (PIPs) aimed at the reduction of technical and commercial losses. Specifically, this component will finance:

- a) the procurement and installation of smart pre-payment meters (along with associated software);
- b) enhancement to meter management systems (existing systems deployed under Millenium Challenge Corporation (MCC) financing);
- c) a standard commercial information system (CIS);
- d) Other associated ICT systems for improving operational efficiency of ECG

The second sub-component of the IPF will finance Technical Assistance (TA) to support project implementation, as well as the implementation of the ESRP and NLPGPP with the aim of filling the gaps identified in the technical, fiduciary and safeguards assessments of the Project.

In terms of the implementation arrangements, the second sub-component of the IPF will be implemented by the Ministry of Energy's (MoEn) Program Coordination Unit (PCU), while the first sub-component of the IPF will be implemented by ECG's Project Implementation Unit (PIU). ECG will be the implementing agency that is responsible for the management of funds allocated for the sub-component (i.e., for the metering), as well as for the procurement and installation of the meters, and for management of Environmental and Social (E&S) risks associated with the project. A dedicated Project Coordinator, Procurement Specialist, E&S safeguards Specialist, and a Financial Management Specialist will be part of the PIU at ECG. However, due to the need to streamline procurement processes and ensure that the activities are executed satisfactorily, ECG has signed a Memorandum of Understanding (MoU) with NEDCo to, on behalf of NEDCo, procure and install pre-payment meters for NEDCo's customers, including some non-strategic Ministries, Departments, and Agencies (MDAs) within NEDCo's areas of operation. Per provisions of the MoU, NEDCo will be responsible for supervising the installation of the meters within its operational areas.

A breakdown of the project activities to be implemented by ECG and NEDCo towards technical and commercial loss reduction include the following:

- Installation of smart load limiters for lifeline customers.
- Replacement of meters older than 10 years.

- Replacement of residential meters that are non-MMS (Meter Management System) compliant.
- Replacement of Ministries, Department, and Agencies (MDAs) meters to smart and Meter Management System (MMS) compliant.
- Replacement of all EDMR meters for Automated Meter Reading (AMR) and High consuming customers with MMS compliant smart post-paid meters.

1.3 Purpose of the Environmental and Social Assessment

To institute a general risk identification framework for assessing and managing the potential environmental and social (E&S) risks associated with the IPF components, the World Bank requires the Borrower to prepare an Environmental and Social Management Framework (ESMF). This also is consistent with the screening outcome under the Environmental Assessment Regulations (LI 1652), requiring ESMF for the project (Appendix 1). The project design and implementation will be guided by the World Bank Environmental and Social Framework (ESF), with the following Environment and Social Standards (ESSs) considered relevant in the assessment process:

- ESS1: Assessment and management of environmental and social risks and impacts;
- ESS2: Labor and working conditions;
- ESS3: Resource efficiency and pollution prevention and management;
- ESS4: Community health and safety;
- ESS10: Stakeholder engagement and information disclosure.

The ESMF will also comply with the Environmental Assessment Regulations of Ghana, which require that the project proposal be registered, and follow the assessment process to obtain an Environmental Permit, authorizing project implementation (Appendix 1). Under the ESF, the Environmental and Social Risk Classification (ESRC) for the project is moderate. The screening criteria/guidelines developed (in the ESMF) under the EA Regulations also place most of the sub-subjects at the Initial Assessment and Preliminary EA levels, which is largely consistent with the moderate ESRC under the World Bank ESF.

The specific objective of the ESMF is to assess and provide measures to avoid, minimize, or mitigate the E&S risks and impacts of project activities under the IPF component of the ESRP. Accordingly, it provides plans for managing and monitoring the mitigation measures. The ESMF establishes guidelines to screen and assess potential impacts and risks and manage and monitor mitigation measures for the identified project activities under the IPF. Furthermore, the ESMF addresses issues related to cumulative risks and potential synergies, and outlines the institutional responsibilities relating to the general management for sustainable implementation of project components/activities.

1.4 Methodology for the ESMF

The key methodologies for the ESMF involved stakeholder engagements and institutional capacity needs assessment (as provided in Appendices 2 to 5), and review of relevant national and institutional policies, laws, regulations, and procedures. The stakeholders involved in the ESMF process are as listed below:

- Ministry of Energy (MoEn);
- Electricity Company of Ghana (ECG);
- Northern Electricity Distribution Company (NEDCo);
- Public Utilities Regulatory Commission (PURC);
- EPA - Head Office – Environmental Assessment and Audit Department, Accra;
- EPA - Institute of Environmental Studies, Amasaman;
- Energy Commission (EC);
- National Petroleum Authority (NPA);
- State Interest and Governance Authority (SIGA);
- Tamale Metropolitan Assembly;
- Ga South Municipal Assembly;
- Green Advocacy Ghana (i.e., NGO);
- Africa Centre for Energy Policy (i.e., NGO); and
- Traditional Authorities.

1.5 Structure of Report

This draft ESMF report is organised into 11 main chapters preceded by an executive summary as follows:

- Chapter 1: Introduction;
- Chapter 2: Policies, regulatory and institutional framework;
- Chapter 3: Project description;
- Chapter 4: Environmental and socio-economic baseline conditions;
- Chapter 5: Public participation/stakeholder engagement;
- Chapter 6: Assessment of potential impacts and risk;
- Chapter 7: Environmental and social mitigation measures;
- Chapter 8: E&S safeguards systems and capacity building; • Chapter 9: Environmental and social management plan; and
- Chapter 10: ESMF implementation plan.

2.0 POLICY, REGULATORY AND INSTITUTIONAL FRAMEWORKS

The key policy and regulatory frameworks relevant to the energy sector have been reviewed in this section, as well as institutional requirements for environmental assessment and management. These have been applied in the assessment as necessary to ensure sustainable project implementation. The ten broad themes under which these were considered are as follows:

- National environmental policy and requirements;
- Energy sector policy and related requirements;
- Local governance and planning requirements;
- National labour, safety and health requirements
- Requirements on land for development;
- Environmental quality standards;

- Requirement on gender and social protection;
- International requirements and safeguards policies;
- Areas of difference – Ghana EA Regulations and the World Bank ESF; and
- Relevant institutions.

2.1 National Environmental Policy and Requirements

The policy and regulatory areas reviewed and applied in the assessment included:

- National Environmental Policy, 2012;
- Environmental Protection Agency Act, 1994 (Act 490);
- Environmental Assessment Regulations, 1999 (LI 1652);
- Fees and Charges (Amendment) Instrument, 2019 (LI 2386);
- Ghana National Climate Change Policy, 2013;
- Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917);
- Hazardous, Electronic and Other Wastes (Classification), Control and Management Regulations, 2016 (LI 2250); and
- Technical Guidelines on Environmentally Sound E-Waste Management for Collectors, Collection Centres, Transporters, Treatment Facilities and Final Disposal (2018).

2.1.1 National Environmental Policy

The National Environmental Policy (2012) is fashioned for a holistic management of the environment, where people have access to clean air and water, decent housing, and other necessities of life. The policy supports a new paradigm of sustainable development, based on coordinated environmental management to ensure the quality of life of citizens and their living and working environments, as well as participation in decision-making.

2.1.2 Environmental Protection Agency Act

The Environmental Protection Agency (EPA) is the body responsible for regulating the environment as mandated by EPA Act, 1994 (Act 490), and ensuring the implementation of government policies on the environment. The functions of the Agency include:

- Ensuring compliance with laid down environmental assessment regulations;
- Promoting effective planning in the management of the environment;
- Controlling and monitoring the generation, treatment, and disposal of waste; and advising on regulation and management of hazardous substances; and
- Acting in liaison and co-operation with government agencies, District Assemblies and other bodies and institutions to control pollution and generally protect the environment.

The Agency is also vested with the power to require Environmental Assessments (EAs), Environmental (and Social) Management Plans (EMPs/ESMPs), and Annual Environmental Reports (AERs) of ‘undertakings’, and to regulate and serve Enforcement Notice for any offending or non-complying undertaking. The Agency is required to conduct monitoring to verify compliance with environmental permit conditions.

2.1.3 Environmental Assessment Regulations

Consistent with Section 28 of Act 490, the Environmental Assessment Regulations, 1999 (LI 1652) were enacted to regulate Environmental Assessment application in Ghana. The regulations prohibit commencing an “undertaking” without prior registration and environmental permit. Undertakings/activities are grouped into Schedules 1 and 2 for those requiring registration and environmental permit and EIA mandatory undertakings, respectively. Schedule 5 relevant undertakings are those proposed within or near environmentally sensitive areas, which are also required to be subjected to EIA.

2.1.4 Fees and Charges (Amendment) Instrument

The Fees and Charges (Amendment) Instrument, 2019 (LI 2386) sets out the fee regime for processing and environmental permits associated with the Environmental Assessment Regulations.

The relevant processing fee will be invoiced upon submission of the draft ESMF report and will be paid for. An environmental permit fee will also be invoiced prior to the finalization of the ESMF and the issuance of the environmental permit.

2.1.5 National Climate Change Policy

The National Climate Change Policy, 2013 affirms Ghana’s resolve to lessen the potential hardships that climate change impacts may pose to sustainable development. The policy seeks to provide strategic directions and co-ordinate issues of climate change in Ghana, bearing in mind its linkages with development.

The Policy is built on seven systematic pillars and the objective of the Policy is to mitigate and ensure an effective adaptation in key sectors of the economy, such as agriculture and food security, natural resources management, energy, industry, and infrastructure among others. The policy gives direction for climate change mitigation measures.

2.1.6 Hazardous and Electronic Waste Control and Management Act

The Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917) provides for the control, management and disposal of hazardous, electrical, and electronic waste and related purposes. The Act also states that a person involved in the management of hazardous wastes or other wastes shall:

- Take the steps that are necessary to prevent pollution from hazardous wastes and other wastes arising from the management; and
- Where pollution occurs, minimize the consequences of the pollution on human health and the environment.

2.1.7 Hazardous, Electronic, and Other Wastes Control and Management Regulations

The Hazardous, Electronic, and Other Wastes (Classification), Control and Management Regulations, 2016 (LI 2250) is derived from the parent Act 917 and applies principally to waste generators, transporters, and managers, but not to domestic waste. The purpose includes:

- Classification, control, and management of wastes;
- General duties of waste generators, waste transporters, and managers; and
- Requirements for the disposal of wastes.

2.1.8 Technical Guidelines on Environmentally Sound E-Waste Management

The Technical Guidelines on Environmentally Sound E-Waste Management for Collectors, Collection Centres, Transporters, Treatment Facilities and Final Disposal in Ghana (2018) address the various target groups of the reverse supply chain of electronic and electric equipment becoming e-waste. The guidelines are mandatory in compliance with Act 917, Act 328 and LI 2250. The guidelines specifically address the following:

- Collectors (Tier 1);
- Collection centres (Tier 2);
- Transporters (Tier 3);
- Treatment facilities (Tier 4); and • Final disposal (Tier 5).

The guiding principles for Tier 1 apply to any person that collects, sorts or consolidates ewaste. Tier 2 refers to centres where e-waste is temporarily stored before transported to treatment facilities or for final disposal. The guiding principles for Tier 3 apply to an entity that transports e-waste (in accordance with Regulation 56 of LI 2250) from a collection point to a recycler, between collection centres (from a collector to collector), or from a recycler to a recycler (between treatment facilities). Tier 4 are treatment facilities that dismantle (Section 49), recycle (Section 50), prepare for reuse or repair/refurbish (Section 46) and recover (Section 58) e-waste under LI 2250. The guiding principles for Tier 5 apply to the final disposal of certain hazardous fractions at landfills, incineration and other technologies approved by EPA.

ECG/NEDCo is not directly provided for in the regulation, however, activities under the project will involve generation, transportation and storage of large volumes of e-waste. Provision for Tier 2 and Tier 3 offer some guidelines for handling e-waste under the project.

2.2 Energy Sector Policy and Related Requirements

The relevant energy sector policy, legislation, and other requirements reviewed, included:

- Energy Commission Act, 1997 (Act 541);
- Public Utilities Regulatory Commission, 1997 (Act 538);
- Electricity Supply and Distribution (Technical and Operational) Rules, 2005 (LI 1816);
- Electricity Transmission (Technical, Operational and Standards of Performance) Rules, 2008 (LI 1934);
- Electricity Supply and Distribution (Standards of Performance) Regulations, 2008 (LI 1935);

- Electricity Regulations, 2008 (LI 1937);
- Sustainable Energy for All Action Plan, 2012;
- National Energy Policy, 2010;
- Strategic National Energy Plan (SNEP), 2006;
- Electrical Wiring Regulations, 2011 (LI 2008); and
- National Electricity Grid Code, 2009.

2.2.1 Energy Commission Act

The Energy Commission Act, 1997 (Act 541) established the Energy Commission and provided for its functions relating to the regulation, management, development, and utilization of energy resources in Ghana; it provides for the granting of licenses for the transmission, wholesale supply, distribution and sale of electricity and natural gas; refining, storage, bulk distribution, marketing and sale of petroleum products and to provide for related matters. The Commission has a fund created for the promotion of projects for energy efficiency and productive uses of electricity.

2.2.2 Public Utilities Regulatory Commission

The Public Utilities Regulatory Commission, 1997 (Act 538) requires the establishment of guidelines for pricing of power generated, taking into consideration assurance of financial viability of power produced, investor interests and best use of natural resources. PURC also has the mandate to:

- Monitor standards of performance for the provision of utility services;
- Provide guidelines on rates chargeable for the provision of utility services; and
- Examine and approve utility rates.

To achieve its mandate, PURC has various legal instruments to support its work, which include:

- Public Utilities (Termination of Service) Regulations, 1999 LI 1651;
- Public Utilities (Complaints Procedure) Regulations 1999, LI 1665; and
- Public Utilities (Consumer Service Committee) Regulations 2002.

PURC in 1999 issued guidelines for electricity rate-setting in Ghana. It provides the key elements of electricity rate making methodology and contains the general guiding principles used as the basis for rate-setting.

The Public Utilities (Complaints Procedure) Regulations 1999, LI 1665 and the Public Utilities (Consumer Service Committee) Regulations 2002 are available for the interest of customers and for lodging complaints, if anyone is short-changed in power supply.

2.2.3 Electricity Supply and Distribution (Technical and Operational) Rules

The Electricity Supply and Distribution (Technical and Operational) Rules, 2005 (LI 1816) provide the rules for the supply and metering of electricity. It also provides the conditions under

which a public utility licensed to supply electricity to customers will do so; as well as the conditions under which a customer may be disconnected from electricity supply. Also, under this rule, the safety conditions under which electrical installations may be carried out is provided.

2.2.4 Electricity Transmission (Technical, Operational and Standards of Performance) Rules

The Electricity Transmission (Technical, Operational and Standards of Performance) Rules, 2008 (LI 1934) ensure that the transmission system provides a fair, transparent, nondiscriminatory, open access, safe, reliable, secure and cost-efficient transmission and delivery of electricity.

The Metering Sub-Code, Section 28 (1) of the rules sets out the requirements for standards, procedures and guidelines and respect of metering at the connection points within the national interconnected transmission system in order to ensure accurate and transparent accounting, billing and settlement for energy sales and purchase transactions. The sub-code also sets out provision relating to design, specifications, installation, maintenance and testing of metering installation equipment.

2.2.5 Electricity Supply and Distribution (Standards of Performance) Regulations

The Electricity Supply and Distribution (Standards of Performance) Regulations, 2008 (LI 1935) provide for performance benchmarks for electricity supply and distribution in conformity with the provisions of Electricity Supply and Distribution (Technical and Operational) Rules, 2005 (LI 1816). It provides the standards within which electricity may be supplied to a customer and the penalty if the distribution utilities fail to perform up to the desired standard. It applies to electricity supply and distribution utilities licensed by the Energy Commission.

These regulations also provide a safety net for consumers, by the standards with which electricity should be supplied to a customer, and the penalty to the distribution utilities for failure to adhere to the desired standard.

2.2.6 Electricity Regulations

The Electricity Regulations, 2008 (LI 1937) provide for:

- The planning, expansion, safety criteria, reliability and cost effectiveness of the national interconnected transmission system;
- The market and technical operations of the electricity transmission utility;
- Minimum standards and procedures for the construction and maintenance of facilities and installations;
- The protection of the mains and electrical installations and services; and
- The protection of life and property and the general safety of the public in respect of electricity services.

2.2.7 Sustainable Energy for All Action Plan

Ghana has adopted a Sustainable Energy for All Acceleration Framework (SEAAF) to analyse constraints, identify and initiate concrete commitments and actions towards the three objectives of “Sustainable Energy for All”, namely:

- Ensuring universal access to modern energy services;
- Doubling the global rate of improvement in energy efficiency; and
- Doubling the share of renewable energy in the global energy mix.

2.2.8 National Energy Policy

The policy expresses Government’s commitment to provide adequate, reliable and cost-effective electricity supply as well as ensure universal access to electricity by 2020. In view of this, Government seeks to expand power generation capacity as well as rehabilitate and reinforce transmission and distribution infrastructure to meet the projected growth in power demand of 10% per year in the medium term, which requires about 200MW new capacity additions annually; and increase access of electricity to consumers.

2.2.9 Strategic National Energy Plan

The Strategic National Energy Plan (SNEP), 2006 aims at contributing to the development of a sound energy market that would provide sufficient, viable and efficient energy services for Ghana’s economic development. This would be achieved through the formulation of a comprehensive plan that will identify the optimal path for the development, utilisation and efficient management of energy resources available to the country. The SNEP reiterates the sector Ministry’s vision to develop an ‘energy economy’ that would ensure sustainable production, supply and distribution of high-quality energy services to all sectors of the economy in an environmentally friendly manner for Ghana’s future, while making significant contribution to the country’s export earnings.

2.2.10 Electrical Wiring Regulations

The Electrical Wiring Regulations, 2012 (LI 2008) establishes the requirements, procedures and practices to ensure the enforcement of minimum standards of electrical wiring on premises and ensure the safety of persons, livestock and other properties from hazards that arise from the presence, distribution and use of electrical energy.

Regulation 10 of the LI under connection of electricity supply to premises indicates that, an electricity distribution utility shall not supply electricity to premises unless the requirements of the Regulations have been complied with and the electrical wiring or installation has been undertaken by a certified electrician as required under Regulation 7 of the LI.

2.3 National Labour, Safety and Health Requirements

The requirements and provisions for the protection of workers, the promotion of health and safety, and the general well-being of project workforce and the public reviewed included:

- Factories, Offices and Shops Act, 1970 (Act 328);

-
- National Health Policy 2020;
 - Public Health Act, 2012 (851);
 - National Workplace HIV/AIDS Policy (2004);
 - National HIV/AIDS and STI Policy, 2013;
 - Imposition Restriction Act, 2020 (Act 1012);
 - National Employment Policy 2014;
 - Labour Act, 2003 (Act 651);
 - Workmen's Compensation Law, 1987 (PNDCL 187);
 - Ghana National Fire Service Act, 1997 (Act 537);
 - Fire Precaution (Premises) Regulations, 2003 (LI 1724); and
 - Control and Prevention of Bushfires Act, 1990 (PNDCL 229).

2.3.1 Factories, Offices and Shops Act

The Factories, Offices and Shop Act, 1970 (Act 382) spells out the responsibilities of an employer in ensuring a safe and healthy work environment. It defines a factory to include any premises (whether in or not in a building) in which one or more persons are employed in manual labour in any process. The Act mandates the Department of Factories Inspectorate (DFI) to register such activities and ensure that internationally accepted standards of providing safety, health and welfare of persons are adhered to.

2.3.2 National Health Policy

The National Health Policy 2020 serves as the basis for the development of health sector priorities and planning. It aims at creating wealth through health, and among other things places emphasis on improvements in personal hygiene, immunization of mothers and children, the practice of safe sex and the prevention of injuries at both workplaces and on the road.

2.3.3 Public Health Act

The Public Health Act, 2012 (Act 851) of Ghana was passed to prevent disease, promote, safeguard, maintain and protect the health of humans and animals, and provide for related matters. The Act has various groupings including communicable diseases, environmental sanitation, etc.

2.3.4 National Workplace HIV/AIDS Policy

The broad objectives of the National Workplace HIV/AIDS Policy (2004) among others, are to provide protection from discrimination in the workplace to people living with HIV and AIDS; prevent HIV and AIDS spread among workers; and provide care, support, and counselling for those infected and affected.

2.3.5 National HIV/AIDS and STI Policy

The overall goal of the revised National HIV/AIDS and STI Policy (2013) is to create a favourable environment for every aspect of HIV/AIDS and STI prevention, care, and support.

Some of the main objectives of the policy are to set standards for the national response to HIV/AIDS to:

- Halt and reverse incidence of new infections to achieve zero new infections;
- Reduce HIV-associated morbidity and mortality and ensure continued survival; and
- Ensure that the basic human rights of each person, especially persons infected and affected by HIV are respected, protected, and upheld.

2.3.6 Imposition Restriction Act

The Imposition Restriction Act, 2020 (Act 1012) provides for the imposition of restrictions that are reasonably required in the interest of public safety, public health on the movement or residence within Ghana of any person or persons generally, or any class of persons. This Act with the provisions of the Executive Instruments (EI 64 to date) is used to regulate the wearing of face masks by the public when moving out of homes and impose restrictions on public gatherings and travels to help reduce the spread of COVID-19.

2.3.7 National Employment Policy

The National Employment Policy (2014) indicates that the key source of demand for labour emanates from the productive sectors of the economy, namely, agriculture, industry, and service. One of the key strategies of the employment policy is to promote formal and nonformal employment through modernisation, improving productivity and promoting effective linkages formal and informal workers.

2.3.8 Labour Act

The purpose of the Labour Act, 2003 (Act 651) is to amend and consolidate existing laws relating to labour, employers, trade unions and industrial relations. The Act provides for the rights and duties of employers and workers; guarantees trade unions and freedom of associations and establishes the Labour Commission to mediate and act in respect of all labour issues. The provisions under Part XV (Occupational Health, Safety and Environment), of the Act explicitly prescribes the duty of an employer to ensure that every worker works under satisfactory, safe, and healthy conditions, is relied on extensively to cater for workers at both construction and operation phase of the project.

2.3.9 Workmen's Compensation Law

The Workmen's Compensation Law 1987 (PNDCL 187) holds employers responsible for the payment of compensation to workmen for personal injuries caused by accidents arising out and in the course of their employment. Where an employee sustains personal injury by accident arising out of, and in the course of employment, the employer is liable to pay compensation.

The broad objectives of the policy among others, are to provide protection from discrimination in the workplace to people living with HIV and AIDS; prevent HIV and AIDS spread among workers; and provide care, support, and counselling for those infected and affected.

2.3.10 Ghana National Fire Service Act

The Ghana National Fire Service Act, 1997 (Act 537) re-establishes the National Fire Service to provide for the management of undesired fires and to make provision for related matters. To achieve its objective; the Service organises public fire education programmes and provides technical advice for building plans and structural layouts to facilitate escape from fire, rescue operations and fire management.

2.3.11 Fire Precaution (Premises) Regulations

Fire Precaution (Premises) (Amendment) Regulations, 2016 (LI 2249), requires a fire certificate for premises used as a public place or place of work. It is incumbent on any project developer to ensure that adequate provision and measures are introduced to minimize or prevent fire outbreaks.

2.3.12 Control and Prevention of Bushfires Act

The Control and Prevention of Bushfires Act, 1990 (PNDCL 229) prohibit the starting of bushfires by any person for any purpose. A bushfire is described as an action of a person that results in the uncontrolled burning of a farm, forest, or grassland. The Act provides for the establishment of a fire volunteer squad in every town, area, or unit. The National Fire Service is responsible for the training of these fire volunteer squads.

2.4 Environmental Quality Standards

The relevant environmental quality standards reviewed included:

- Ghana Standard on Health Protection - Requirements for Ambient Noise Controls (GS 1222:2018); and
- Ghana Standard on Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019).

2.4.1 Ghana Standard on Health Protection - Requirements for Ambient Noise Controls

The Ambient Noise Controls (GS 1222:2018) provide for maximum permissible levels of noise based on categorised zones as shown in Table 2.1. The standard also provides noise requirement for a construction site which includes:

- Erecting an acoustic barrier around construction site; and
- Ensuring that the maximum noise level near the construction site does not exceed 66dB(A) Leq (5min) in areas other than industrial areas.

Table 2.1 Requirements for Ambient Noise Control

Zone	Permissible Noise Level in dB(A)	
	Day (6:00am-10:00pm)	Night (10:00pm-6:00am)
Residential Area	55	48
Educational and health facilities, offices, and law courts	55	50
Mixed used	60	55

Area with some light industry	65	60
Commercial Areas	75	65
Light Industry Areas	70	60
Heavy Industry Areas	70	70

2.4.2 Ghana Standard – Requirements for Ambient Air Quality

The Ghana Standard on Environment and Health Protection - Requirements for Ambient Air Quality and Point Source/Stack Emissions (GS 1236:2019) provides the maximum limit for ambient air pollutants (Table 2.2).

Table 2.2 Requirements for Ambient Air Quality – Maximum Limit for 24 Hours

Substance	Maximum Limit (µg/m ³)
Sulphur Dioxide (SO ₂)	50
Nitrogen Oxide (NO ₂)	250
Total suspended particulate matter	150
PM ₁₀	70
PM _{2.5}	35

2.5 Requirement on Gender and Social Protection

The relevant policies on gender and social protection reviewed included:

- National Gender Policy, 2015;
- Children’s Act, 2016 (Act 937);
- Ghana National Social Protection Policy, 2015;
- Domestic Violence Act, 2007 (Act 732);
- Affirmative Action Bill (drafted 2011); and • Persons with Disability Act, 2006 (Act 715).

2.5.1 National Gender Policy

The National Gender Policy, 2015 overarching goal is to mainstream gender equality (GE) concerns into the national development processes by improving the social, legal, civic, political, economic, and socio-cultural conditions of the people of Ghana particularly women, girls, children, the vulnerable and people with special needs, persons with disability and the marginalized. The policy focuses on mainstreaming GE, women empowerment (WE) and social protection concerns by strongly concentrating on the implementation of the following five policy commitments (representing policy objectives):

- Women’s empowerment and livelihood;
- Women’s rights and access to justice;
- Women’s leadership and accountable governance; • Economic opportunities for women; and
- Gender roles and relations.

The government continues to promote equitable access to justice through the Judiciary. In this direction, there are Human Right Courts that support GE and WE issues. In addition, the Judiciary has established two Gender-based and Sexual Offences Courts to expedite the adjudication of cases of violence and abuse. There is also the Legal Aid Scheme which facilitates access to justice for persons who are unable to afford justice.

The Domestic Violence and Victim Support Unit (DOVVSU) of the Ghana Police Service is mandated to respond to and enforce all laws with a focus on sexual and gender-based violence (GBV), child abuse and child protection; and protection of all vulnerable persons from abuse.

2.5.2 Children's Act

The Children's Act 2016 (Act 937) seeks to reform and consolidate the law relating to children, to provide for the rights of the child, maintenance, and adoption, regulate child labour and apprenticeship, for ancillary matters concerning children generally, and to provide for related matters. Section 87 of this Act specifically states that "No person shall subject a child to exploitative labour", therefore no activities of project shall engage children below the working age.

2.5.3 Ghana National Social Protection Policy

The Ghana National Social Protection Policy (2015) defines social protection as "a range of actions carried out by the state and other parties in response to vulnerability and poverty, which seek to guarantee relief for those sections of the population who for any reason are not able to provide for themselves". The policy aims to deliver a well-coordinated, inter-sectoral social protection system enabling people to live in dignity through income support, livelihoods empowerment and improved access to systems of basic services. It also aspires to mitigate and reduce vulnerabilities for all, close the inequality gap and ensure total inclusion for all Ghanaians.

The policy focuses on the following sectors: infrastructure development; agriculture sector; climate change (adaptation and mitigation activities); service sector; and rural electrification and water supply

2.5.4 Domestic Violence Act

The Domestic Violence Act, 2007 (Act 732) provides protection for domestic violence particularly women and children and related purposes. A Court with original jurisdiction may hear and determine a matter of domestic violence under this Act and may exercise its jurisdiction by issuing a protection order. The Act defines domestic violence as specific acts, threats to commit, or acts likely to result in the following:

- Physical abuse;
- Sexual abuse;
- Economic abuse;
- Emotional verbal or psychological abuse; and

- Harassment including sexual harassment and intimidation by inducing fear in another person.

2.4.5 Affirmative Action Bill

The Affirmative Action Bill drafting began in 2011 and till date, the Bill has not been passed. The bill aims to promote women's effective participation and representation in all decisionmaking spaces. The bill presents itself as the guaranteed way to increasing women's representation in decision making spaces such as Parliament, District Assemblies, Ministerial and Ambassadorial appointments and other areas of governance in Ghana. It also, seeks to reverse the discrimination of the marginalised groups (women) and the subsequent adverse effects on sustainable development.

2.4.6 Persons with Disability Act

The Persons with Disability Act, 2006 (Act 715) provides certain rights to protect persons with disabilities. The Act states that a person or an employer shall not:

- Discriminate against or subject a person with disability to degrading treatment;
- Discriminate against a prospective employee or an employee on grounds of disability;
- Call a person with disability derogatory names; and
- Post a person with disability to a section of the establishment not suited for the person.

The Act further provides that a person who employs a person with disability shall provide the relevant working tools and the appropriate facilities required for the efficient performance of the functions.

2.5 International Requirements and Safeguards

The relevant international standards reviewed included:

- The World Bank Environmental and Social Framework (ESF), 2016;
- The World Bank Group General Environmental Health and Safety Guidelines, 2007;
- Open Government Partnership (OGP), 2011; and
- Extractive Industries Transparency Initiative (EITI), 2003.

2.5.1 World Bank Environmental and Social Framework

The World Bank ESF sets the Bank's commitment to sustainable development through a bank policy and a set of Environmental and Social Standards (ESSs) that are designed to support borrowers' projects, with the aim of ending extreme poverty and promoting shared prosperity. The eight (8) relevant ESSs to this project are described in Table 2.3.

Table 2.3 Summary of the World Bank ESSs Considered in the ESMF

Standards	Summary
ESS 1: Assessment and Management of Environmental and Social Risks and Impacts	Sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with all stages of a project supported by the Bank

ESS 2: Labour and Working Conditions	Recognizes how Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions
ESS 3: Resource Efficiency and Pollution Prevention and Management	Sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life-cycle since economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people and ecosystem services
ESS 4: Community Health and Safety	Address the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable
ESS 10: Stakeholder Engagement and Information Disclosure	Recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice.

2.5.2 World Bank Group General Environmental Health and Safety Guidelines

The World Bank Group (WBG) General Environmental Health and Safety (EHS) Guidelines, 2007 is a technical reference document containing information on cross-cutting environmental, health and safety issues potentially applicable to all industry sectors. The General EHS guidelines, which prescribe performance levels and measures, are designed to be used together with the relevant Industry Sector EHS Guidelines. These documents are to be the reference for EHS measures implemented for WBG-funded projects. The General guidelines are in 4 main groups: Environmental; Occupational Health and Safety; Community Health and Safety; and Construction and Decommissioning.

2.5.3 Open Government Partnership

The Open Government Partnership (2011) is a multilateral initiative that aims to secure concrete commitments from governments to promote transparency, empower citizens, fight corruption, and harness new technologies to strengthen governance. The right to information, gender and inclusion, digital governance and rights, protection of civic space and natural resources, and corruption are some of the issues addressed by OGP participants of which Ghana is a member since 2011 when it was established.

2.5.4 Extractive Industries Transparency Initiative

The Extractive Industries Transparency Initiative (EITI) 2003, implements the global standard to promote the open and accountable management of oil, gas, and mineral resources. The EITI ensures transparency and accountability about how a country's natural resources are governed in the extractive sector. This ranges from how the rights are issued, to how the resources are monetized, to how they benefit the citizens and the economy. Ghana in 2007 committed to strengthening transparency and accountability of their extractive sector management by implementing the EITI Standard.

2.6 Comparison of the World Bank ESF with National Requirements

There are significant gaps between the World Bank ESF requirements and those of the Ghanaian laws. This section presents a comparison between the Core requirements of the ESS and the Ghana laws, policies and legislative instruments relating to the project activities. These gaps analysis are presented in Table 2.4.

Table 2. 4 Comparison Between the ESF Standards and the Relevant Ghanaian Legislations

Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
ESS1: Assessment and Management of Environmental and Social Risks and Impacts	ESS1 sets out the Borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank. A Borrower is expected to manage those risks throughout the project life cycle in a systematic manner, proportionate to the nature and scale of the project and the potential risks and impacts.	The Environmental Protection Agency Act, 1994 (Act 490) and Environmental Assessment Regulations, 1999 (LI 1652). These laws mandate an environmental assessment for projects to evaluate their environmental risks and impacts, and to propose mitigations.	Though the Ghanaian laws provide for the development of environmental impact assessment. There are no clear requirements in the laws for addressing social issues such as sexual exploitation, abuse, and harassment (SEA/SH), promotion of inclusiveness, etc.	Clear guideline should be provided for sexual exploitation abuse and harassment (SEA/H), vulnerability, people with disability, inclusiveness, the need for timely and effective consultation, timely and responsive grievance redress mechanism (GRM) and adequate consideration of project affected persons and communities in stakeholder engagement

ESS2: Labour and Working Conditions	ESS2 provides specific requirements on occupation health and safety, expanding upon the World Bank Group's Environmental, Health and Safety Guidelines. The ESS2 has the following objectives: - To promote safety and health at work. - To promote the fair treatment, nondiscrimination and equal opportunity of project workers. - To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate. - To prevent the use of all forms of forced labor and child labor.	- Labour Act, Act 651 (2003): Part XV, Section 118 (1) and (2a-h) of the Act requires employers to ensure that every worker employed by them works under satisfactory safe and healthy conditions, and is further obliged to provide necessary information, instructions, training and supervision to ensure the health and safety at work of those other. - Workmen Compensation Act (1987); the policy covers death, diseases, illness and injury sustained by employees arising out of and during the course of work. The law states that employees should be mandatorily compensated in the unfortunate event of injury arising out of work. - Factories, Offices and Shops Act, Act 328 (1970) – An act to provide for the registration of factories, the health, welfare and safety of persons employed in factories, offices, shops and other	The Ghanaian laws unlike the ESS3 do not consider protection of vulnerable groups and prevention of all forms of forced and child labour. - it does not provide for grievance mechanism that addresses the concerns of workers promptly and in a transparent manner. There is also no comprehensive law or national policy on occupational safety and law in Ghana. Laws protecting workers are isolated. The Labour Act 2003, Act 651, Workmen Compensation Act 1987, and Factories, Offices, and Shops Act 1970, Act 328 addresses health and safety at the workplace. However, these laws do not also proffer GRM for the prompt redress of workers' concerns.	The IPF project will adopt the ESS 2 as a best management practice and strictly adhere to the labour management procedure developed in this ESMF to promote fair treatment, non-discrimination, and equal opportunities for project workers. There is a need to strengthen Workers organization to ensure that grievance redress mechanism systems are set up. More focus should be given to industry standards for occupational health and safety of workers as well as issues of child labour and forced labour.
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Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
	- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law. - To provide project workers with accessible means to raise workplace concerns.	places, and matters connected therewith. Among other things, the Department of Factories Inspectorate is mandated by this Act to conduct a technical safety, health, and welfare inspection regularly of all premises within its jurisdiction to ascertain compliance of the law. Children's Act – the act prohibits any form of child labour.		

ESS3: Resource Efficiency and Pollution Prevention and Management	ESS 3 requires Borrowers to implement technically and financially feasible measures to improve efficient consumption of energy. It also includes a requirement on management of wastes, chemical and hazardous materials, and requires Borrowers to estimate gross GHG emissions, where technically and financially feasible. Where the project involves historical pollution, the Borrower must establish a process to identify the responsible party.	The Environmental Protection Act 1994 (Act 490), Part I of the Act include the environmental permits and pollution abatement notices and the prescription of standards and guidelines. Part II of the Act sets out provisions for enforcement and control. The Act empowers the EPA to appoint “Environmental Protection Inspectors” and any other employees necessary to provide the functions of the Act. Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917). The act provides for the control, management, and disposal of hazardous, electrical, and electronic waste and related purposes. Hazardous, Electronic, and other Wastes (Classification) Control and Management Regulations, 2016 (L. I. 2250). This regulation is derived from the Hazardous and Electronic Waste Control and Management Act 2016, which applies to waste generators, transporters, and managers.	While there are policies in Ghana to address waste and pollution issues, there are challenges in the effective implementation of these policies.	More focus must be put on effective waste management and efficient use of natural resources. The implementing agencies and works contractors shall be required to develop comprehensive waste management plans as part of the CESMP and adhere to the provisions in the plan.
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Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
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		Technical Guidelines on Environmentally Sound E-Waste Management for Collectors, Collection Centers, Transporters, Treatment Facilities and Final Disposal in Ghana, 2018. Water and Sewerage Corporation Act, Act 310 (1965) & Environmental Sanitation Policy (1999): These policies cover both solid waste management and sewage. Pesticides Control and Management (regulated under Part II of the EPA Act 490 (1994))		
ESS4: Community Health and Safety	ESS4 address the health, safety, and security risks and impacts on projectaffected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.	The Environmental Protection Agency Act, 1994 (Act 490) and Environmental Assessment Regulations, 1999 (LI 1652) require that the public and community members are consulted during project development and implementation to enhance proposed mitigation measures put in place to safeguard public health. Public Health Act, 2012 (Act 851) focuses on the prevention of diseases, promotion, safeguarding, maintaining and protection of the health of humans and animals, and other related matters.	The Ghanaian laws do not provide for the consideration of the venerable groups during environmental assessment and the implementation of measures to address emergency events.	Beyond consultation with project affect communities stated in LI 1652, there is a need to give more attention to vulnerable groups in project communities. Works contractors shall be required to develop and emergency preparedness and response plan as part of their OHS plan and work closely with the National Disaster and Management Organization on emergency events such as fire outbreaks.
ESS10: Stakeholder Engagement and Information Disclosure	ESS10 emphasizes stakeholder engagement throughout the project life cycle, and requires a Stakeholder Engagement Plan (SEP). It encourages early identification of stakeholders, both project-affected parties and other interested parties. Under ESS10, engagement must be proportionate to the nature, scale, risks and impacts of	Environmental Assessment Regulations, 1999 (LI 1652) Sections 15 and 17 require a proponent to initiate a public information and consultation program for the area likely to be affected by the undertaking.	LI 1652 does not clearly provide guidance on the conduct of an effective and meaningful stakeholder / public engagement and disclosure, neither does it identify the development of a grievance mechanism as part of a stakeholder engagement plan.	The use of the Stakeholder Engagement Plan is an add on to the public information and consultation program which should be focused on timely, relevant, understandable and accessible information, engagement in a culturally appropriate manner, which is free of manipulation,

	the project, and appropriate to stakeholders' interests. ESS10 specifies			interference, coercion, discrimination and intimidation.
Policy	Summary of Core Requirements	Ghana Laws, Policies and Legislative Instruments	Gaps Identified	Measures to Bridge Gap
	process and criteria for information disclosure and meaningful consultation. It requires an accessible and inclusive grievance mechanism, proportionate to risks and impacts.			

In the event of differences between the national legal framework and the ESF, the one that provides the highest environmental and social management measures and better protection of parties would be adopted and implemented.

2.7 Other Relevant Institutions

The other relevant institutions related to the project include:

- State Interest and Governance Authority;

2.7.1 State Interest and Governance Authority

The State Interest and Governance Authority (SIGA) was established by the Act, 2019 (Act 990). SIGA covers specified entities including the energy sector, local government and rural sector land and natural resource sector, agricultural sector among others and is mandated to:

- Oversee and administer the State's interest in specified entities to ensure shareholder value, financial sustainability and good corporate governance;
- Ensure that state-owned enterprises and joint venture companies introduce effective measures that promote the socioeconomic growth of the country; and
- Ensure that specified entities adhere to good corporate governance practices.

3.0 PROJECT DESCRIPTION

3.1 Project Overview

As already explain in the introduction, this ESMF covers components of the program that will be financed under the IPF. The proposed IPF activities will generally be implemented at the national level. One part of the IPF component will finance priority investments defined in Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company's (NEDCo) Performance Improvement Programs (PIPs) aimed at the reduction of technical and commercial losses. Specifically, this component will finance the procurement and installation of smart pre-payment meters (along with associated software), enhancement to meter management systems; a standard commercial information system (CIS), and other associated ICT systems for improving operational efficiency of ECG. The other part of the IPF component will finance Technical Assistance (TA) to support project implementation, as well as the implementation of the ESRP and NLPGPP with the aim of filling the gaps identified in the technical, fiduciary and safeguards assessments of the Project.

In terms of the implementation arrangements, the second sub-component of the IPF will be implemented by the Ministry of Energy's (MoEn) Program Coordination Unit (PCU), while the second sub-component of the IPF will be implemented by ECG's Project Implementation Unit (PIU). ECG will be the implementing agency that is responsible for the management of funds allocated for the sub-component (i.e., for the metering), as well as for the procurement and installation of the meters, and for management of Environmental and Social (E&S) risks associated with the project. A dedicated Project Coordinator, Procurement Specialist, E&S safeguards Specialist, and a Financial Management Specialist will be part of the PIU at ECG. However, due to the need to streamline procurement processes and ensure that the activities are executed satisfactorily, ECG has signed a Memorandum of Understanding (MoU) with NEDCo to, on behalf of NEDCo, procure and install pre-payment meters for NEDCo's customers, including some non-strategic Ministries, Departments, and Agencies (MDAs) within NEDCo's areas of operation. Per provisions of the MoU, NEDCo will be responsible for supervising the installation of the meters within its operational areas.

3.2 ECG's Commercial Loss Reduction Project

ECG is the main power distribution company that operates in the southern Sector of Ghana in the area demarcated as the southern distribution zone. This area of operations spans from Ashanti Region downwards. Geographically, ECG's operational area covers eight (8) administrative regions, namely: Greater Accra, Volta, Oti Region, Eastern, Ashanti, Central, Western and Western North Regions. Operationally, ECG, operates 8 regions namely Accra West, Accra East, Tema, Volta, Eastern, Central, Western, and Ashanti Strategic Business Unit. These regions are subdivided into a total of 89 operational districts. A breakdown of the project activities to be implemented by ECG and NEDCo towards achieving commercial loss reduction include the following:

1. Installation of Smart Load Limiters for lifeline customers.
2. Replacement of meters older than 10 years.
3. Replacement of residential meters that are non-MMS (Meter Management System) compliant.

4. Replacement of Ministries, Department, and Agencies (MDAs) meters to smart and MMS compliant.
5. Replacement of all Electronic Distance Meter Instrument (EDMI) meters for Automated Meter Reading (AMR) and High consuming customers with MMS compliant smart post-paid meters.

The project activities will involve meter audit. The outcome of the audit will lead to decommissioning of obsolete and faulty meters and transported to ECG Materials Warehouse for final disposal through scrap vendors. A target of 140,000 meters will be replaced, and correction of minor issues carried out in all operational areas.

3.2.1 Installation of Smart Load Limiters for Lifeline Customers

Smart Load Limiters are specialized but simple meters that limit the amount of electrical power available to a customer without disconnecting the service. These meters will be deployed to lifeline customers instead of installing expensive advance meters. The project is expected to install 200,000 of these Smart Load Limiting meters to ECG's lifeline customers.

3.2.2 Replacement of Meter Older Than 10 Years

Meter older than 10 years functionality decreases. This adds to the commercial loss value of ECG. There is an ongoing exercise to replace all such meters. This project comes in to support the ongoing meter replacement with 1,357,463 additional meters in the project attachment area.

3.2.3 Replacement of Residential Meters That are non-MMS (Meter Management System) Compliant

The project is expected to replace 56,427 (of a total of 500,000) obsolete prepayment meters with a high incidence of faults across all operational areas. It is estimated that these replacements will yield a 2% reduction in losses as we eliminate them from our assets base. Some of the reasons for the immediate replacement are:

- High failure rate requiring meter replacement;
- Date and time updates drift, affecting the integrity of tariff implementation;
- Frequent loss of systems connectivity denying access to vending, transfer of data for sales reporting etc.;
- Blank LCD screen to view any metering information; and
Need to replace the post-paid meters of the non-strategic MDAs to improve revenue collection.

3.2.4 Installation of Prepayment Meters to 11,120 ECG non-SLT non-strategic MDAs

All the non-strategic MDAs are expected to be given prepayment meters. This will involve installing prepayment meters to all 11,000 ECG non-SLT non-strategic MDAs (based on the most recent request) - a proposal from the Ministries of Finance and Energy under the ESRP coordinated by the Energy Commission.

3.2.5 Replacement of all Electronic Distance Meter Instrument (EDMI) meters for Automated Meter Reading (AMR) and High consuming customers with MMS compliant smart post-paid meters.

The project is expected to replace 60,000 (of a total of 500,000) EDMIs with AMR and also replace high consuming customers with MMS compliant meters.

The meter replacement works will include:

- Survey and inventory to identify the number and types of meters to be replaced.
- Procurement of meters based on relevant standards and requirements.
- Installation and commissioning to ensure new meters are functioning correctly.

Prior to replacement/installation, backend data capturing and updating activities will be conducted to review meters identified for replacement in the Meter Management System, considering customer details and the existing meter management platform. Once this is completed, technicians will begin field replacement/installation activities. During installation/replacement:

- Obsolete and noncompliant meters will be disconnected from the power.
- The existing meter will be physically removed from the wall or pole.
- The new meter will be fixed onto a meter board on the wall or pole.
- The load and supply cables will be connected to the power supply module of the new meter.

The safety operations protocol of ECG and NEDCo mandates that all activities during meter installation must be carried out on de-energized lines to prevent accidental contact with energized conductive parts of the meter.

4.0 ENVIRONMENTAL AND SOCIO-ECONOMIC BASELINE CONDITIONS

Given that the project has a national scope, description of the environmental and socio-economic baseline conditions covered the following areas:

- Location;
- Physical environment -
 - Climate (rainfall, temperature, and humidity);
 - Topography and landscape;
 - Drainage and water resources;
 - Water quality;
 - Geology;
 - Soils;
- Biological environment -
 - Vegetation/flora;
 - Fauna;
- Socio-economic and cultural environment -
 - Population;
 - Economic Activity;
 - Infrastructure;

- Electric power generation and distribution in Ghana
 - o Electricity generation; o Access to electricity; and
- E-waste handling and recycling facilities in Ghana.

4.1 Location

Ghana lies along the Gulf of Guinea in West Africa, within longitudes 3°5'W and 1° 10'E and latitudes 4°35'N and 11°N. It covers an area of about 239,000km², with the Exclusive Economic Zone (EEZ) constituting an additional 110,000km of the sea to its territorial area. Ghana has a southern coastal shoreline of 550km. The country is bordered by Togo to the east, La Cote d'Ivoire to the west and Burkina Faso to the north.

4.2 Physical Environment

4.2.1 Climate (Rainfall, Temperature and Humidity)

The climate of Ghana is characterized by dry and wet seasons, a typical tropical monsoonal climate. Rainfall is mainly associated with mesoscale convective systems and controlled by the advection of moisture from the Gulf of Guinea in the low-level atmosphere. This system is usually referred to as the West African Monsoon (WAM), and it is driven by the energy and temperature gradient between the Gulf of Guinea and the Sahara.

The maritime tropical air mass, which originates from the Atlantic Ocean, is moisture laden and converges with the dry northeast continental tropical air mass, usually along the InterTropical Discontinuity (ITD). Therefore, the spatial pattern of annual rainfall is closely related to the north- and south-ward migration of the ITD, resulting in changes in the rainfall regime from the south to north of the country. This gives rise to two rainfall regimes: bi-modal in the south, consisting mainly of coastal and the forest zones, and uni-modal in the northern part of the country, consisting of part of the transition and savannah zones (Amekudzi et al, 2015).

Using the average characteristics of rainfall, temperature, and humidity for a period of 25 – 30 years, Ghana has been classified into four main climatic regions - the South-western Equatorial Climatic Zone, Dry Equatorial Climatic Zone, Wet-semi-Equatorial Climatic Zone and Tropical Continental (savannah) Climatic Zone.

South-Western Equatorial Climatic Zone

This zone is the wettest climatic zone in Ghana, with a double maxima rainfall regime. Mean annual rainfall is above 190cm and an average monthly precipitation of not less than 2.5cm. The highest monthly temperature of about 30°C is recorded between March and April and the lowest of about 26°C in August. Monthly relative humidity (average) of 75-80% during the two rainy seasons and the lowest of 70-80% during the rest of the year. (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours and solar radiation 133km/day, 6.2 hours and 18.1MJ/m²/day, respectively (EPA, 2002).

Dry Equatorial Climatic Zone

This climatic zone has a more marked dry season even though it also has double rainfall maxima. Between 74 and 89cm of mean annual rainfall are recorded. Despite its location, this zone is the driest in the country. Temperatures recorded are, however just like that of the SouthWestern Equatorial Climatic Zone - mean monthly temperatures of 30°C between March and April and 26°C in August. The highest average relative humidity does not exceed 75%, with the lowest being about 60% (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours and solar radiation are 251km/day, 6.5hours and 18.6MJ/m²/day respectively. Annual potential evaporation is about 1504mm, respectively (EPA, 2002).

Wet-Semi-Equatorial Climatic Zone

This zone is also characterized by double maxima rainfall regime but has a mean annual rainfall of between 125 and 200cm. Some of the wetter areas include the Akwapim-Togo Ranges and the Southern Voltaian Plateau, where annual rainfall exceeds 165cm. The first rainy season is from May to June and the second rainy season is from September to October. With a more pronounced dry season, temperatures and relative humidity are, however, as in the southwestern equatorial and the dry equatorial climatic zone (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours and solar radiation are 138km/day, 7.3 hours and 19.6MJ/m²/day respectively. Potential evaporation is 1720mm per annum (EPA, 2002).

Dry Equatorial Climatic Zone

The characteristics of this climatic zone are in sharp contrast with all the others. This is the only climatic region with a single rainy season which starts in May and ends in October, followed by six months of the dry season. Mean annual rainfall of between 100 and 115cm is recorded. Mean annual temperatures vary from about 36°C in March to about 27°C in August. Relative humidity of between 70 and 90% may be recorded during the rainy season but may fall to as low as 20% during the dry season (Benneh and Dickson, 1988). Average annual wind speed, sunshine hours and solar radiation are 81km/day, 7.9 hours and 20.4MJ/m²/day respectively. Potential evaporation is 1652mm per annum and the annual aridity index is 0.60 (EPA, 2002).

Climate Change Exposure

Projections made in Ghana's Fourth National Communication Report to the United Nations Framework Convention on Climate Change (UNFCCC) in 2020 indicated the following:

- Ghana will continue to get warmer. ○ Mean temperature is projected to increase by 1.0-3.0°C by 2060, and 1.5°C-5.2°C by the 2090s. The projected rate of warming is more rapid in the northern inlands than the coastal regions.
 - All projections indicate substantial increases in the frequency of days and nights that are considered 'hot'. There are likelihoods that 'hot' days will occur on 18-59% of days by 2060.
 - Most projections indicate decreases in the frequency of days and nights that are considered cold.
- Rainfall will continue to be uncertain and difficult to predict.

- Projections of mean annual rainfall from different models predict wide range of changes. About half of the models predict increases while the other half project decreases.
- The proportion of total annual rainfall that falls in heavy events tends towards an increase in the ensemble projections.
- Projected changes in 1-and 5-day rainfall maxima trend towards increases, but projection ranges between both increase and decrease in all seasons.
- Sea level rise will continue intensely in already vulnerable coastal areas. ○ Scenarios of sea level changes with respect to 1999 mean, predicts an average rise of 5.8cm, 16.5cm and 34.5cm by 2020, 2050 and 2080 respectively.

Further assessments suggest that vulnerabilities in Ghana due to climate change are not even nationwide (as illustrated in Figure 4.1 and Table 4.1), but greatly influenced by the following: economic sectors, ecological zones (geographic spread) and poverty levels.

4.2.2 Topography and Landscape

The physiographic regions of Ghana (as illustrated in Figure 4.2) are broadly classified into the following: Coastal Plains, the Forest Dissected Plateau (FDP), the Savannah High Plains (SHP), the Voltaian Sandstone Basin (VSB) and the ridges and escarpments bordering the VSB.

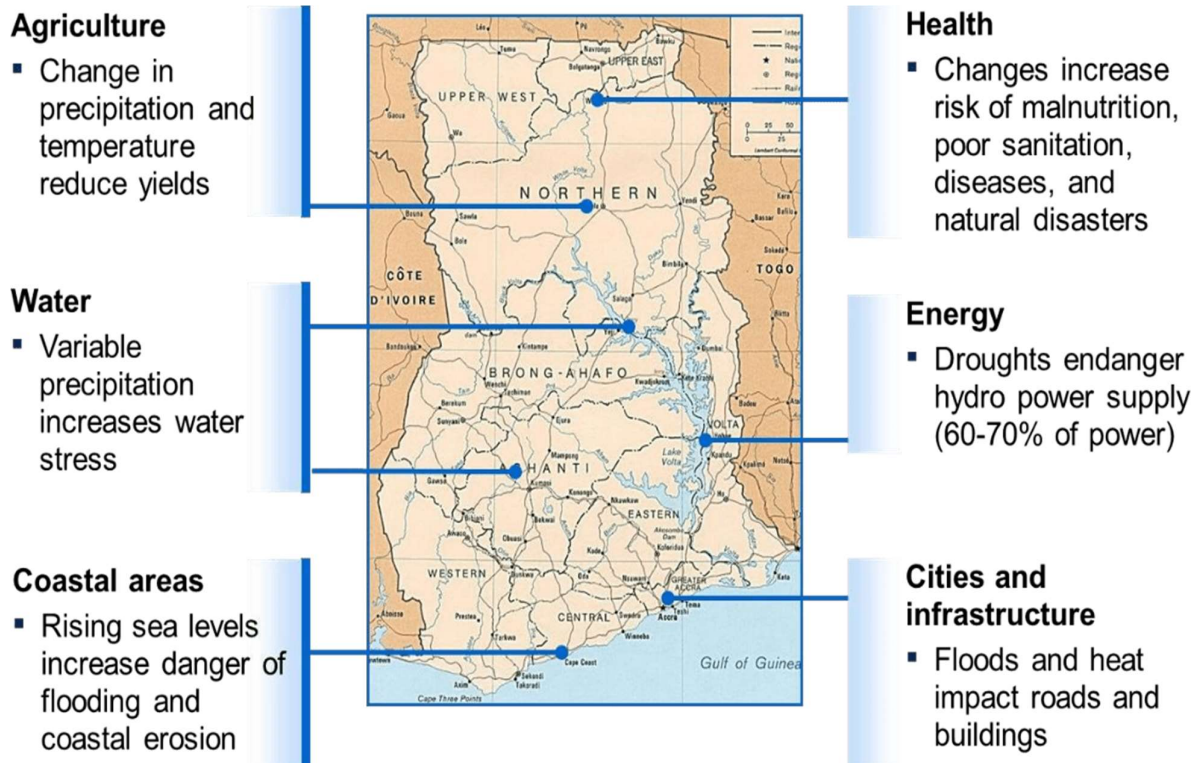


Figure 4.1 Spread of Climate Change Vulnerabilities in specific localities in Ghana

Source: (EPA, 2015) 2015 Climate Change Report. Ghana's Third National Communication to the UNFCCC

Table 4.1 Climate Change Risk in the Different Ecological Zones of Ghana

Figure 4.2 Physiographic Regions of Ghana

Source: Physiographic Regions of Ghana (Dickson and Benneh, 1980)

The Forest Dissected Plateau

Many years of intensive erosion have reduced this area to uniformly low height between 240m and 300m above sea level. The different rock formations in this region have given rise to different relief types, ranging from hills that stand up to 60 - 90 metres above sea level to steep sided hills rising beyond 240m above the flat valley bottom (Dickson and Benneh, 1988).

The Savannah High Plains

The topography is gently rolling with an average height of the plain ranging between 180m and 300m above sea level. Small, rounded hills composed mainly of granite are scattered on this plain (Dickson and Benneh, 1988).

Voltaian Sandstone Basin

Covering an area of about 112,768km², the VSB is made up of an almost flat extensive plain with heights ranging between 60m and 150m in that part of the basin south of the east-west Black Volta and up to about 180m above sea level in that part north of the river (Dickson and Benneh, 1988).

Rides and Escarpments

These comprise the Southern Voltaian Plateau (SVP), the Gambaga escarpment and the Akwapim-Togo Ranges. The SVP marks the southern boundary of the Volta Basin while the Gambaga scarp marks the northern limit of the VSB. Average elevation does not exceed 450m above sea level. The Akwapim-Togo Ranges are fold mountains on the eastern boundary of the VSB. The ranges start from near the mouth of the Densu, West of Accra, and run in a northeasterly direction across the Volta Region and Togo and beyond (Dickson and Benneh, 1988). **The Coastal Plains**

The low-lying coastal plains, only about eight kilometres in width at its western end, stretches eastward through the Accra Plains, where it widens to more than eighty kilometres, and terminates at the south-eastern corner of the country at the lower end of the Akwapim-Togo Ranges. Almost flat and featureless, the Accra Plains descend gradually to the gulf from a height of about 150 meters. The topography east of the city of Accra is marked by a succession of ridges and spoon-shaped valley. The map below shows the physiographic regions of Ghana.

4.2.3 Drainage and Water Resources

Ghana has three major drainage systems, covering about 5% (911,800 km²) of the total area of Ghana. These are the Volta River System (70%), South-western River System (22%) and Coastal River System (8%) (EPA, 2005). Nearly three-fourth of the total land surface area of Ghana lies within the Volta River Basin. The basin can be subdivided into smaller basins – the Black Volta, the White Volta, the Oti and the Volta. The Volta River system basin include the Oti, Daka, Pru, Sene and Afram Rivers. Many of the streams and tributaries of the major rivers in northern Ghana, all of which are tributaries of the Volta System dwindle in the dry season

and flood in the rainy season (Dickson and Benneh, 1988). The Volta Lake, with a surface of 8,500 km², is one of the world's largest artificial lakes. The total renewable water resources are estimated to be 53.2 billion m³ per year (EPA, 2016).

The Southwestern River System comprise the Bia, Tano, Ankobra and Pra basins. The Pra has the largest basin in the closed forest. Unlike the rivers in northern Ghana, the forest rivers are perennial with higher flow pattern (Dickson and Benneh, 1988).

The Ochi-Nawuka, Ochi Amissah, Ayensu, Densu and Tordzie rivers make up the Coastal River System (EPA, 2016). The only area of internal drainage in Ghana is around Lake Bosumtwi, a natural lake with a surface area of approximately 39km² and surrounded by hills. It is located about 34km to the South-East of Kumasi (Dickson & Benneh, 1988) where numerous streams flow into the lake.

The above characteristics of water bodies in the two halves of Ghana implies that any disturbance of water quality resulting from human activity (feeder road and dug-outs construction, etc) could exert severer effect in the northern half during the long dry season. The characteristic widespread seasonal flooding requires careful project components site selection or the need to elevate the base of roads significantly above the general elevation of the corridor neighbourhood. In the southern half, the regularity and high flow of rivers potentially enhance the assimilative and regenerative capacity of the water bodies to support water quality and aquatic life (MRH, 2007).

4.2.4 Water Quality

Compared to groundwater, surface water quality is generally below WHO/EPA drinking water quality standards, mainly attributable to anthropogenic activities, e.g. discharge of untreated waste into water bodies, farming and illegal mining (EPA, 2017). Water quality analyses conducted between 2005 and 2014 showed a decreasing quality over the period (EPA, 2017). Studies by (Ansa-Asare & Gordon, 2012) on Densu, Birim and Ayensu showed high concentration of ammonium and other nutrients, largely from domestic and agricultural sources. In the case of the Birim, the poor quality is because of mining activities (EPA, 2017).

4.2.5 Geology

About two-thirds of the country is dominated by Paleoproterozoic Birimian rocks consisting of five evenly spaced volcanic belts trending northeast-southwest. The intervening basins between the volcanic belts are filled with sediments. The remaining one-third is made up of post-Birimian rocks. The map below shows the geological map of Ghana.

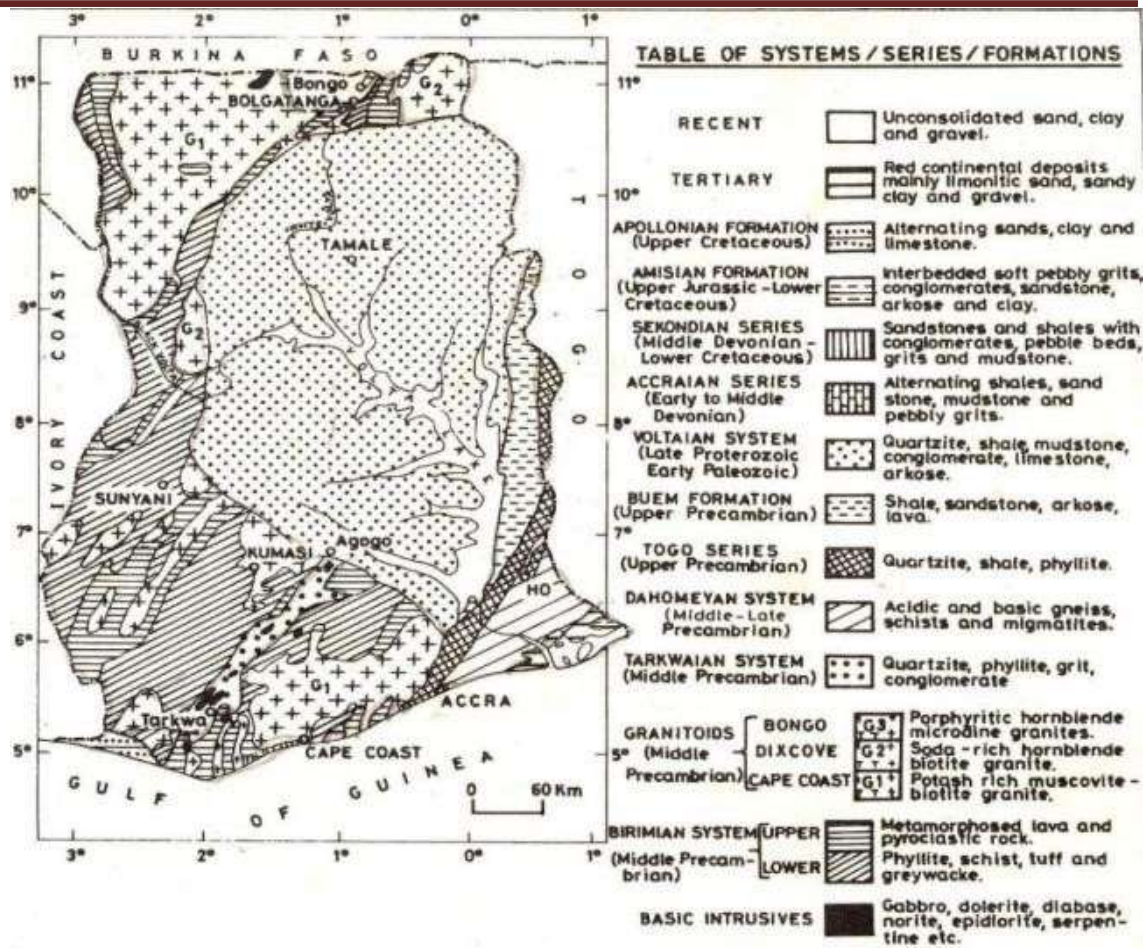


Figure 4.3 Geological map of Ghana

Source: Geological Map of Ghana: (in Geophysical Investigation Report of the Komenda Sugar Factory - Ebenezer Gyamera, 2018)

4.2.6 Soils

The soils of Ghana are derived from rocks of the mid-Paleozoic age or older, comprising mainly of Siluro Devonian sandstone and shales and some igneous and granitic material (Dickson and Benneh, 1980). In the forest zone, where the annual rainfall is between 1,000 and 2,000 mm, forest ochrosols are found. These soils developed from a wide range of highly weathered parent materials including granite, Tarkwaian and Birimian rocks. The soils are porous, well-drained and generally loamy. In the wetter forest areas, sandy Oxisols are found. Lithosols are usually found on steep slopes made up of hard resistant rocks.

The soils in the Voltain and savanna plains are mainly of groundwater laterites and savanna ochrosols. The laterites are developed over both the Voltain shales and granites. They are characterized by the presence of cemented layer of ironstone (also called iron pan) at shallow depths below the surface of the soil, through which rainwater does not percolate easily. Thus, the top layers of the soil become waterlogged right up to the surface in the rainy season but dry up in the dry season. The savanna ochrosols are formed over granites, Birimian rocks and Voltain shales. They are well drained, porous, and loamy.

In the coastal plains, the soils are younger and are closely related to the underlying rocks. They are mainly a mixture of savannah ochrosols, lateritic sandy soils, tropical black earths, sodium

vleisols, tropical grey earths and acid gleisols and coastal sands (Dickson and Benneh, 1980). The lateritic soils found here are developed over acid gneiss and granite and consist of sandy soils overlying a hardened layer of clay, not iron pan. This layer of clay impedes downward drainage and causes water logging in the wet season. The tropical black earths are developed over basic gneiss. During the rainy season, they are heavy, plastic and sticky but in the dry season they become hard and compact and develop wide cracks. The tropical grey earths consist of a few centimetres of firm grey sand overlying a very hard and compact clay layer.

4.3 Biological Environment

4.3.1 Vegetation/Flora

Ghana has six agro-ecological zones, distinguished by natural vegetation and influenced by climate and soil characteristics: Sudan savannah, Coastal savannah, Guinea savannah, transition zone, semi-deciduous forest and rainforest.

Sudan Savanna

The Sudan savanna, which covers an estimated area of 1,900 km², consists of short drought and fire-resistant deciduous trees interspersed with open savanna grassland. Grass cover is very sparse and in most areas the land is bare and severely eroded. Common grasses include *Andropogon spp.*, *Heteropogon spp.*, *Hyparrhenia spp.*, *Aristida spp.*, and *Loudetia spp.* (Sam et al; 1996). Tree cover is very low and include *Anogeissus leiocarpus*, *Acacia sp.*, *Terminalia microcarpa* and *Vitellaria paradoxa*. In the densely settled and cultivated areas, important economic trees such as *Adansonia digitata*, *Ceiba pentandra*, *Butyrospermum parkii*, *Faidherbia albida*, *Parkia sp.*, *Antiaris africana*, *Ceiba pentandra*, *Albizia zygia* and *Azadirachta indica*. *Baphia nitida*, *Grewia sp.*, *Griffonia simplicifolia* and *Milletia spp.* are among shrubs found in the zone and of importance for browse feeding for livestock. Short and medium grasses are the dominant plant species. These include *Andropogon gayanus* and *Hyparrhenia dissoluta* in upland areas and *Vetiveria fulbibarbis* and *Brachiaria falcifera* in low lying areas. *Panicum maximum* often occurs in the moist areas.

The Forest-Savanna Transitional Zone (Derived Savanna)

This zone, covering about 8,300 km², occurs as a normal strip about 48km wide along the north and the north-eastern limits of the semi-deciduous forest. Most of the tree species of the forest zone occur in this area in addition to such species as *Daniella Oliveri*, *Terminalia macroptera* and *Borassus aethiopum*. These trees occur in association with tall to medium tall grasses such as *Andropogon* and *Pennisetum spp.*

The High Rainforest

The rainforest covering an area of about 7,500km² is located in the southwestern corner of the country. The vegetation is generally evergreen although some species common to the semideciduous forest may be found. Such species tend to shed their leaves during the dry season. The zone is characterized by the *Cynometra-Lophira-Tarrietia* association with *Cynometra ananta*, *Lophira alata* and *Tarrietia utilis* as indicator trees. The topography ranges from undulating to rolling with numerous freshwater swamps potentially suitable for rice

cultivation occupying low lying valley bottoms. The swamp vegetation consists of *Raphia* palms with shrubs such as *Alchornea cordifolia*, *Caropa procera* and *Macaranga* spp. entangled by various climbers.

The Semi-deciduous Forest Zone

The semi-deciduous forest zone is about 66,300 km² in extent and forms about 90% of the total forest zone. The characteristic associations are Celtic-Triplochiton and Antiaris-Chlorophora. The indicator trees for the former consist of *Celtic milbraedii* and *Triplochiton scleroxylon* whilst the latter is characterized by *Antiaris africana* and *Chlorophora excelsa*. It is within this zone that most food crops and cocoa cultivation takes place. Most of the timber for both local needs and export comes from the zone. As a result of these activities the vegetation outside forest reserves consists mainly of forest regrowth, thicket, secondary forest, and swamp thicket.

The Rangelands of Ghana

The Sudan, Guinea and Coastal Savanna constitute the rangelands of Ghana. These cover an area of about 156,000km², approximately 65.7% of Ghana's land area. The Interior Savanna (Guinea and Sudan) holds about 74.4% of the nation's cattle population of 1.25 million and 40% of the small ruminant population of 4.95 million. The annual forage production of the rangelands was estimated as 10.6 million metric tonnes of which some 70% were from grassland herbage.

4.3.2 Fauna

The fauna of Ghana, though thought to be relatively impoverished, comprise a diverse array of species including several of conservation concern (MES, 2000). Many of the ecologically important areas are protected. These include:

- Bia and Kakum Conservation Areas;
- Bomfobiri, Owabi and Agumatsa Wildlife Sanctuary;
- Kogya Strict Nature Reserve;
- Digya National Park;
- Kalakpa Resource Reserve; • Gbele Resource Reserves; and • Mole National Park.

Current records indicate that there could be as many as 221 species of amphibians and reptiles, 724 species of birds and 225 mammalian species (with 93 recorded to inhabit the savannah ecological zone; MES, 2002, cited in Ashong, 2004). Threatened species in Ghana include four species of marine turtles and three species of crocodiles. Three species of frogs (*Hyperolius baumanni*, *H. fusciventris* and *H. sylvaticus*) and the lizard, *Agama sylvanus* have been found to be endemic in the country (MES, 2002). A total of over 3,600 plant species, representing the three major taxonomic groups can be found in Ghana (MES, 2002). The wet evergreen forest exhibits the most diverse level of endemism and species richness in Ghana. The Ankasa and Nini-Suhien Conservation Areas are biological 'hotspot', because of their high biological diversity (CI, 2002, cited in EPA, 2005).

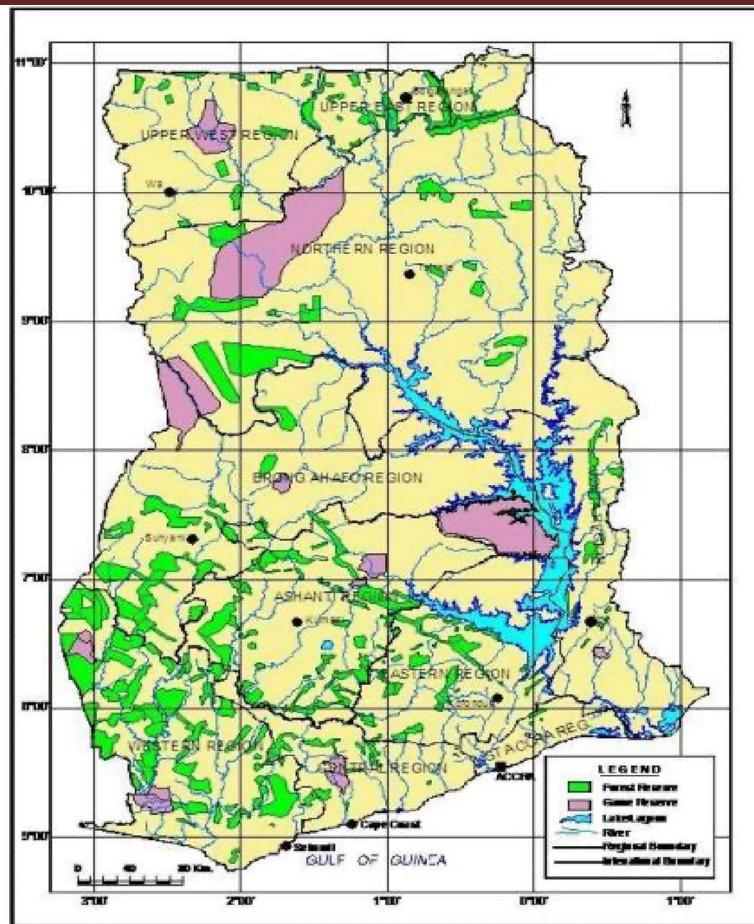


Figure 4.4 Map of Protected Areas in Ghana

Source: Forestry Commission (2017) ESMF for REDD+ Mechanism in Ghana

4.4 Socio-economic and Cultural Environment

4.4.1 Population

Provisional results from the 2021 Population and Housing Census by the Ghana Statistical Service put the country's population at 30.8 million (representing an increase of 6.1 million from the 24.7 million recorded in 2010), constituting an annual inter-censal growth rate of 2.1%. This rate is less than what was observed in the previous intercensal period (2000–2010: 2.5%); the lowest observed since independence. At this rate, the country's population is predicted to double within 33 years. And by 2050, the population of Ghana would be over 50 million (GSS, 2021).

Greater Accra Region is now the most populous region in Ghana, overtaking the Ashanti Region which has been the most populous region since 1970. Ashanti Region closely follows as the second most populous region. These regions are both almost twice (1.9) times the size of the third most populous region, Eastern Region.

The Central Region is now the fourth most populous region following the splitting of the former Western, Brong Ahafo and Northern Regions who were all more populous than Central Region in 2010. The four most populous regions make up over half (54%) of the total population.

The Ahafo Region is the least populous region taking the place of the Upper West, which had been the least populous in all the previous post-independence censuses. The Savannah and North-East Regions are the second and third least populous regions respectively.

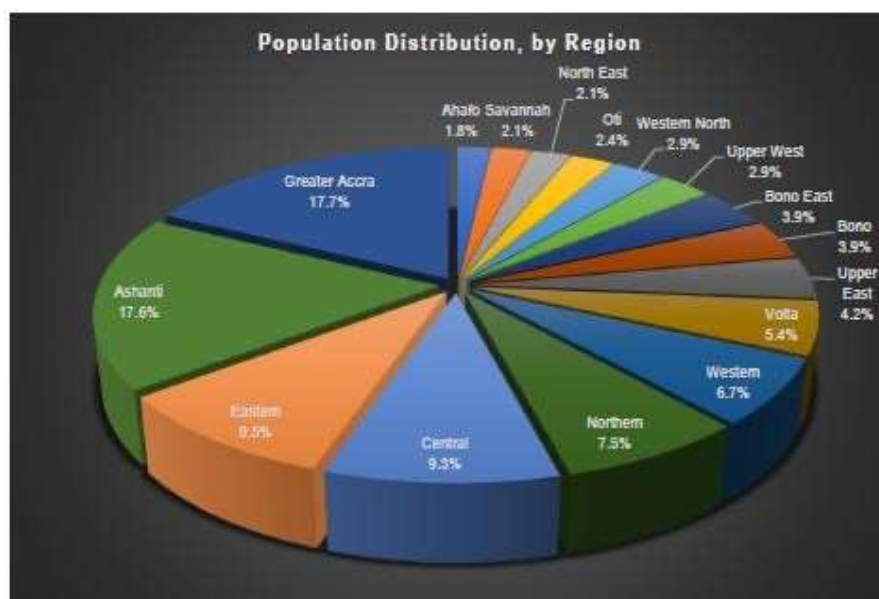


Figure 4. 5 Population Distribution by Region (GSS, 2021)

Disparities in the population size across region have been the largest observed since 1960 when Ghana conducted its first post-independence census. In 1960, the most populous region, Eastern, was almost five times (4.63) the size of Upper West, the least populous. In 2010, the most populous region, Ashanti was almost seven times (6.81) the size of the least populous, Upper West. In 2021, the two most populous regions, Greater Accra and Ashanti, are almost 10 times (9.6) the size of Ahafo, the least populous. There are 11 other regions that are at least twice as populous as Ahafo, and six that are thrice as populous. For Savannah and North East, there are seven other regions twice as populous and five that are thrice as populous.

The current Northern Region had the largest change in population with about 50% increase over its population in 2010. The two other regions that made up the then Northern Region in 2010, North-East and Savannah, had the second and third largest intercensal increases (41.7% and 38.4%) respectively. The next highest change recorded was in Greater Accra with an addition of 35.8%.

Age-Sex Distribution

The sex ratio of 97 males for 100 females in 2021 represented a slight increase over the sex ratio of 95 recorded in 2010. The 1960 census is the only post-independence census which recorded more males than females (102 males to 100 females). Since then, sex ratios have declined until the uptick observed in 2021. Regional sex ratios in the 2021 PHC range from 91 males for every 100 females in the Volta Region to 105 males to every 100 females in the

Western North Region, and these rates are consistent with the findings from the 2010 Census where the then Volta Region had the lowest sex ratio of 89 with the then Western Region recording the highest of 104.

Household Size

The total number of households has grown by 2.8 million (representing a 52% increase) over the 5,467,136 households enumerated in 2010. Household size declined by 0.8, from 4.4 in the 2010 census. A similar decline of 0.9 was observed between the 2010 and 2000 censuses. The population density at the national level increased by 26 persons per square kilometre over the 103 recorded in 2010. The 2010 PHC recorded 3.4 structures for residential use, which is 2.5 million less than the 5.9 counted in 2021.

Greater Accra Region is now the most populous region in Ghana, overtaking the Ashanti Region, which has been the most populous region since 1970. Ashanti Region closely follows as the second most populous region. These regions are both almost twice (1.9) times the size of the third most populous region, Eastern Region. The Central Region is now the fourth most populous region following the splitting of the former Western, Brong Ahafo and Northern Regions who were all more populous than Central Region in 2010. The four most populous regions make up over half (54%) of the total population.

The Ahafo Region is the least populous region taking the place of the Upper West, which had been the least populous in all the previous post-independence censuses. The Savannah and North East Regions are the second and third least populous regions, respectively.

Educational and Literacy Levels

At the national level, more than half (72.1%) of the population 3 years and older, in rural areas, has never attended school compared to 27.9% in urban areas. Among the male population 3 years and older in the urban area, a little over one fifth (20.8%) has never attended school, compared to more than half (79.2%) of their male counterparts in the rural areas (GSS, 2016).

Of the total population 3 years and older, 32.8% have attained primary education while less than one percent (0.7%) have attained a post graduate degree. There are variations in the level of education by urban-rural location and by sex, particularly for higher education. At the national level, less than 4 percent (3.9%) of the male population had attained a Bachelor's degree compared to less than 3 percent (2.2%) of the female population in same category (GSS, 2016).

At the aggregate level, the literacy rate of population 11 years and older in Ghana is 63% for both sexes, 71.8% for males and 55.5% for females. Urban-rural variations exist, with the literacy rate for both sexes in the urban area (74.5%) being higher than in the rural areas (50.1%). This means that there are more literate individuals in the urban communities than in the rural communities. The distribution by region indicates that Greater Accra region has the highest literacy rate for both sexes, as well as for urban and rural communities in the region, while the lowest literacy rate for both sexes is observed in the Northern region (34.5%).

4.4.2 Economic Activity

Employment

About two-thirds (67.6%) of the population are employed (all those of working age 15 years and older) who, during the seven days preceding the interview, were engaged in any activity to produce goods or provide services for pay or profit, 9.1% are unemployed and 23.3% are not in the labor force. Irrespective of sex, per the definition, the population in rural areas (70.4%) is more likely to be employed than those in urban areas (65.1%) (GSS, 2016).

The regional distribution of current activity status of the population indicates that the Northern Region has the highest proportion of persons employed (76.4%) while the Upper East Region has the lowest (58.7%). It also shows that more males than females are employed, depicting the national pattern. Conversely, the Upper East region has a higher proportion of persons who are unemployed (13.2%) compared to the other regions; the region also recorded the highest proportion of those who are not in the labour force (28.0%). The data generated also suggest that the proportion of the employed labour force increases with increasing age except after 49 years. The proportion of the employed increased from 24.9% for age 15-19 through to age 45-49 where it peaks at 88.7%. The employed population then starts decreasing from age group 50-54 (88.1%) to age 65 years and older (44.3%) (GSS, 2016).

Occupation

Skilled agricultural, forestry and fishery workers constitute the largest occupational group, engaging 2,949,805 of the currently employed. However, more females (1,910,966) are engaged as service and sales workers compared to any other occupation. Whereas in the rural localities, skilled agricultural, forestry and fishery work are the main occupation for the employed (employing 2,537,466 of those in current employment), service and sales is the main occupation for those in urban localities, engaging 1,792,906. More than half of females (52.2% or 1,366,355) in urban localities are engaged in service and sales work (GSS, 2016). Agriculture, forestry, and fishing remains the main industry of employment, engaging 3.3 million of the currently employed. This is followed by wholesale and retail trade and the repair of motor vehicles and motorcycles (1.9 million). Manufacturing is the third major industry of employment, engaging about 1.2 million of the currently employed. Female labour force participation over the years has been lower than that of their male counterparts. However, data gathered shows that in absolute numbers, there are more women working in Ghana today (4,981,953) than the number of men (4,281,393) in current employment (GSS, 2016).

Hours of Work

Most males (29,103) who are managers work at least 40-49 hours a week. More females (157,582) than males (115,047) who work as service and sales workers work at least 70 hours a week. The average hours worked a week by currently employed persons is 33.4. The highest mean hours of work per week was by persons engaged in administrative and support service activities (54 hours) and those in transport and storage industry (45.4 hours). The least number of hours worked per week is in the agriculture, forestry and fishing industry (26.3 hours) (GSS, 2016).

Secondary Occupation

About 5.3% of the currently employed have a secondary activity (GSS, 2016). The proportion of those engaged in secondary activity is higher in rural (6.4%) than urban (4.3%) localities. Available data also indicates that about one in every ten male professionals (10.4%) in rural localities engaged in a secondary activity. Again, 6.1% of female skilled agricultural, forestry and fishery workers in urban localities engaged in secondary activities. More than one in ten females engaged in craft and related trades in rural localities (10.9%) engaged in secondary activities. Workers take a second job to tackle “working poverty” (make ends meet and help maintain their standard of living).

Agricultural Activities

A total of 2,203,965 households representing 25.8 % of Ghanaian households are engaged in agricultural activities of which 1,690,026 are headed by males (76.7%) and 513,939 or 23.3 % by females. Among the urban households, 428,065 (9%) were engaged in agricultural activities out of which 318,409 and 109,656 households are headed by males and females respectively. Among the rural households, nearly 47% are engaged in agricultural activities of which 1,321,429 and 402,051 are headed by males and females, respectively. Agricultural activities in Ghana are predominantly rural (80.6% or 1,775,900).

The Northern Region has the highest proportion of households (54.5%) engaged in agricultural activities, out of which 272,173 and 22,499 are headed by males and females, respectively. The Greater Accra region (2.4%) had the least number of households engaged in agricultural activities of which 31,392 and 9,281 households are headed by males and females, respectively.

4.4.3 Road Infrastructure

The Ministry of Transport (2011) reported that 95% of transportation in Ghana is by road. This is an indication that road transport is the predominant means of transportation, which is used for passenger travel as well as movement of goods across the country and neighbouring West African countries. According to the Medium-Term Expenditure report submitted by the Ministry of Roads and Highways (2016), there were 72,381km of road networks in Ghana as of 2017 with 14,873km being trunk road, 15,463km being urban roads and the remaining 42,045km being feeder roads. It was also reported that 31% of these roads are being maintained as required with 66.6% of the road having rural accessibility index (i.e. the percentage of human population within 2km of the roads) (Akinradewo et al, 2019).

4.5 Electric Power Generation and Distribution in Ghana

4.5.1 Electricity Generation

Installed Electricity Generation Capacity

The installed electricity generation capacity increased from 1,652MW in 2000 to 5,172MW in 2019 representing an annual average growth rate of 6.2%, whilst dependable capacity increased from 1,358MW in 2000 to 4,695MW in 2019 (2020 EC Energy Statistics). Between 2012 and

2019, there was a significant increase in the installed capacity from 2,280MW in 2012 to 5,172MW in 2019, representing an annual average increase of 12.4%. Also, the installed grid connected renewable capacity increased from 2.5MW in 2013 to 42.6MW as at the end of 2019, whilst the total installed renewable capacity (including off-grid and mini-grid) increased from 2,995kW in 2013 to 78,614kW in 2019.

The thermal generation capacity increased from 580MW in 2000 to 3,549MW in 2019 whilst the hydro generation capacity increased from 1,072MW in 2000 to 1,580MW as at the end of 2019. The installed thermal generation capacity registered a significant increase of 2,301MW between 2014 and 2019 representing an annual average growth of 23.2%.

Electricity Generation

The total electricity generation increased more than two-fold, from 7,224GWh in 2000 to 18,189GWh in 2019, representing an average annual increase of 5% (2020 EC Energy Statistics). The share of hydro in the total electricity generation decreased from 91.5% in 2000 to 39.9% in 2019 whilst that of thermal increased from 8.5% in 2000 to 59.8% in 2019. This represents annual average growth rate of 0.5% and 16.3% for hydro and thermal respectively.

The electricity generation from the renewable sources commenced with the construction of a 2.5MW solar plant in Navrongo in the Upper East Region, the first grid connected solar plant in the country by the Volta River Authority (VRA) in 2013. The electricity generated by the VRA solar plant in that year was 3GWh. The generation of electricity from renewable sources increased to 52GWh by the end of 2019 with the coming online of an additional 40MW solar plant and a 100kW biogas plant. As at the end of 2019, electricity generated from renewable sources constituted 0.3% of the total electricity generated in the country.

Electricity Transmitted and Transmission Losses

The total electricity transmitted increased from 8,067GWh in 2000 to 17,887GWh in 2019 (2020 EC Energy Statistics). This represents an annual average increase of 4.3% between the period. The total electricity transmitted between 2018 and 2019 increased from 15,960GWh in 2018 to 17,887GWh in 2019 representing a growth of 12.1% over the quantity transmitted in 2018. In terms of transmission losses incurred over the period, its value increased from 229 GWh (2.8% of the total electricity transmitted) in 2000 to 844GWh (4.7% of the total electricity transmitted) in 2019. Over the period of 2000 and 2019, 4% of electricity on the average is lost during transmission.

Electricity Purchases and Sales by Distribution Utilities

In 2000, distribution utilities (ECG and NEDCo) purchased a total of 4,319GWh of electricity for distribution to their various customer classes. The total sales to customers were 3,142GWh resulting in a distribution loss of 1,176GWh, representing 27.2% of the electricity purchased. The total purchases by the distribution utilities (ECG, NEDCo, & EPC) increased to 13,183 GWh in 2019. Out of this, 3,260GWh representing 24.7% of electricity purchased for distribution was lost.

Electricity Sales by Customer Class

Electricity sales to Special Load Tariff (SLT) customers constituted 67.9% (4,305GWh) of the total electricity sold to various customer classes in 2000. The residential sector followed, with 23.1% (1,464GWh) in that year. The structure of electricity sales by utilities remained relatively the same in 2019 with sales to the SLT taking the largest share of electricity sales to the various customer classes. The SLT customers consumed 5,282GWh of total electricity sale representing 42.9% with the residential sector taking 4,755GWh representing 38.6% of total sales. The electricity used for street lighting increased from 15GWh in 2000 to 755GWh in 2019, representing an annual average growth rate of 22.9%.

Electricity Consumption by Sector

The final electricity consumed by the various sectors of the economy is illustrated in Figure 4.6. In 2000, the industrial and residential sectors consumed 4,380GWh and 2,026GWh, respectively representing 63.6% and 29.4% of the total final electricity consumed. In 2019, however, the residential share increased to 6,357GWh, representing 45.6% of the total final electricity consumed followed by the industrial sector with a share of 30.4% representing 4,242GWh of the total final electricity consumed (2020 EC Energy Statistics).

4.5.2 Access to Electricity

On equity, 85% of the population had access to electricity in 2020 (Energy Commission of Ghana, 2020). This made Ghana one of the African countries most likely to achieve 100% universal access by 2030. Between 2000 and 2019, electricity generation capacity increased at a rate of 6.4% a year from 1,358MW to 4,695MW. Supply capacity has nearly doubled since the 2013 power crisis. At the same time, system peak demand grew at a 4.6% annual rate from 1,161MW to 2,804MW. The increase in power generation supported Ghana's economy to grow in real terms by 6.67% a year between 2011-2019. Electricity demand is estimated to have grown at 7% - 10% a year since 2010. Despite energy generation being in excess of demand, power remains expensive and unreliable, and has become a constraint on doing business in the country. Figure 4.6 provides the distribution/relative shares of Ghana's population with access to electricity while Figure 4.7 illustrates the overall growing access to electricity from 1993 to 2019 (2020 Energy Statistics).

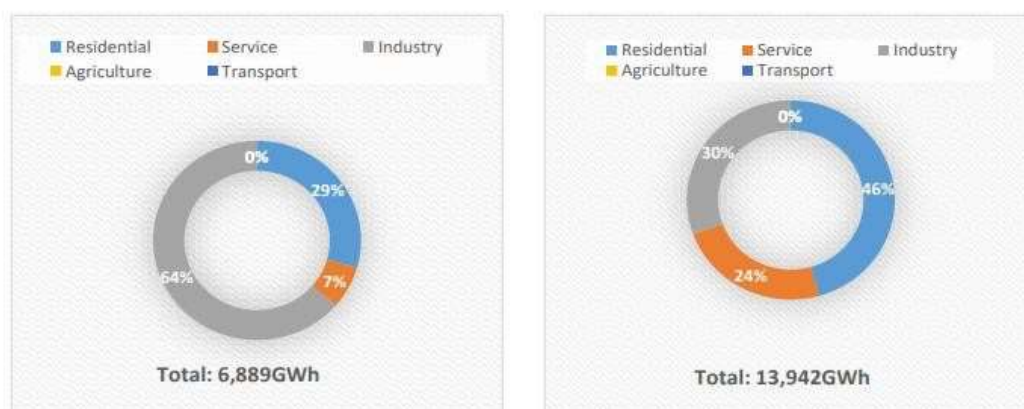


Figure 4.6 Electricity Consumption by Sector - 2000 & 2019



Figure 4. 7 Proportion of Population with Access to Electricity Source:
Energy Commission, Ghana. National Energy Statistics 2000-2019

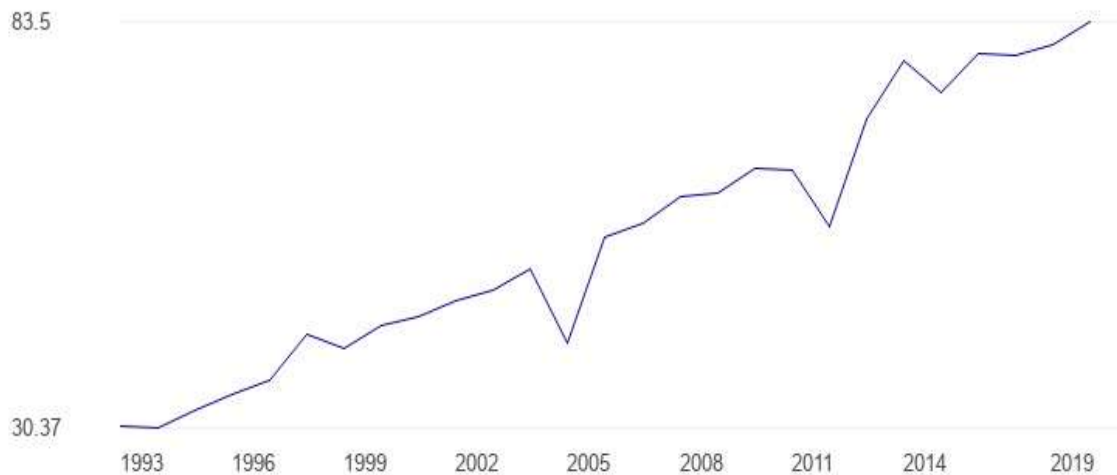


Figure 4. 8 Access to Electricity (% of population) – Ghana (World Bank website)

4.6 E-waste Handling and Recycling Facilities in Ghana

There has been a phenomenal growth in the ICT sector in Ghana in the last decade due to its application in the national growth process (institutions, internet cafes, houses, etc.) (Prakash et al 2010). In Ghana, the collection and re-cycling of e-waste is mainly by the informal sector (Grant et al 2012). The practice however exhibits a highly stratified system, comprising collection, recycling, refurbishment and reuse activities and eventually the disposal of the residual materials (Oteng-Ababio, 2012).

Some waste electrical and electronic equipment (WEEE) are processed informally using rudimentary methods such as manual disassembly and open burning. The appliances are stripped of their most valuable and easily extracted components which are processed to directly reusable components or secondary raw materials in a variety of refining and conditioning processes. Figure 4.9 below gives an overview of the end-of-life management practices in Ghana.

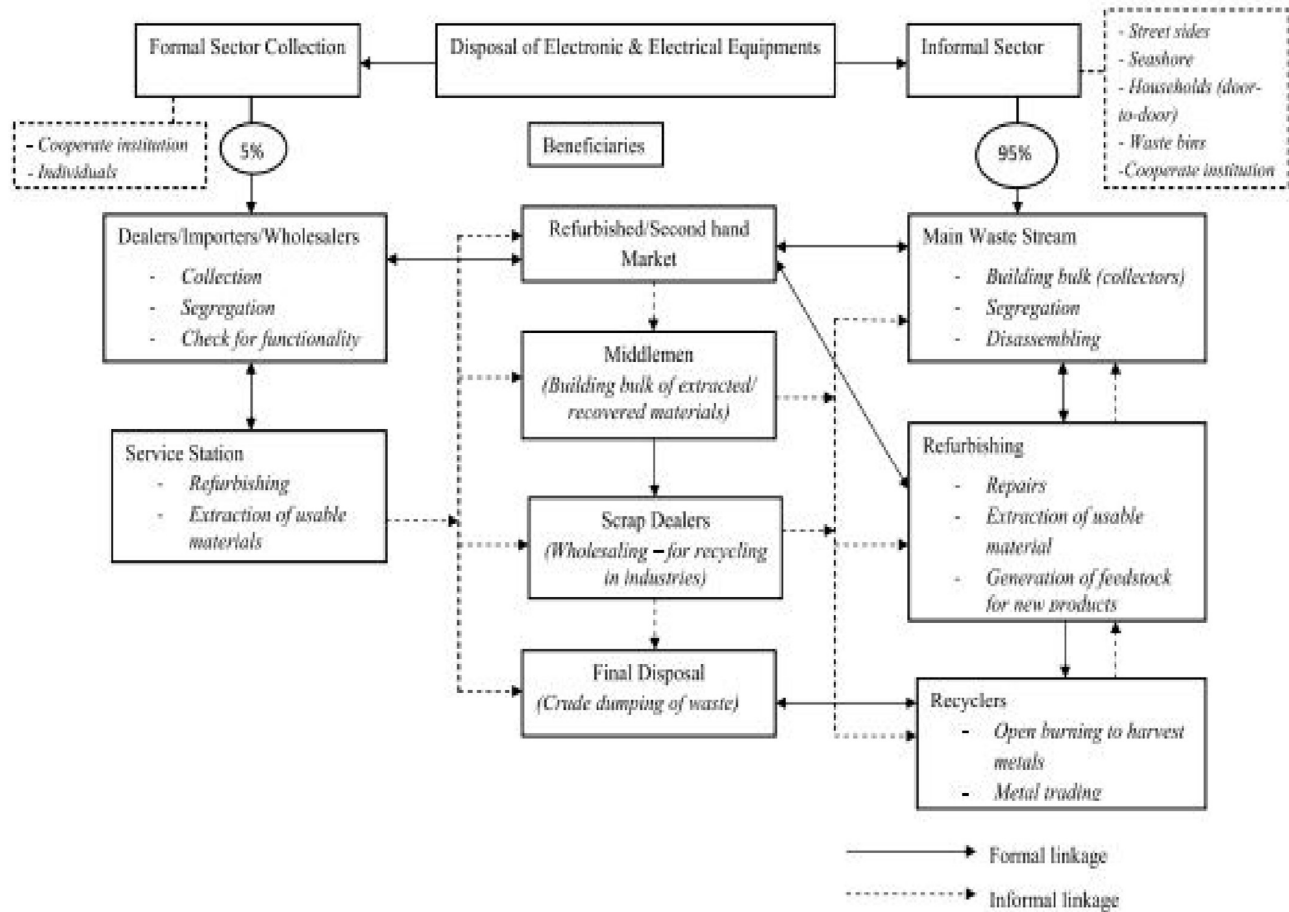
The collectors are mostly youthful and constitute majority of the workforce in the e-waste business. They are the actors who execute door-to-door collections of used electrical and electronic equipment (EEE) from private homes, institutions, dump sites, etc. The Agbogbloshie Scrapyard was formerly the hub of most of the informal e-waste handling, primarily involving manual dismantling of WEEE, as well as burning of cables to isolate metals such as copper and aluminium for sale. Additionally, repairing and refurbishing have emerged as important segments of e-waste management. Refurbishing transforms old/non-functioning products by replacing defective components.

Figure 4.9 Recycling and Disposal Practices

The e-waste management landscape has, however, significantly improved since 2015, with the:

- Enactment of the Hazardous and Electronic Waste Control and Management Act, 2016 (Act 917);
- Enactment of the Hazardous, Electronic and Other Wastes (Classification), Control and Management Regulations, 2017 (LI 2250);

- Establishment of the Electrical and Electronic Waste Management Fund (2018); •



Preparation of the Technical Guidelines on Environmentally Sound E-Waste Management for Collectors, Collection Centres, Transporters, Treatment Facilities and Final Disposal in Ghana (2018);

- Launch of the Pilot Incentive Scheme by GIZ (2018); and
- Launch of the MESTI-KfW Incentive Payment System for Defined Scope of E-Waste Types at Old Fadama Scrapyard (2019).

The MESTI-KfW project is on-going - operating a Handing Over Centre at Agbogbloshie that receives e-wastes such as cables, batteries, thermoplastics, and cathode ray tube (CRT) from collectors on the incentive payment system. The Technical Guidelines on Environmentally Sound E-Waste Management address the various target groups of the reverse supply chain of EEE becoming WEEE. The guidelines are mandatory in compliance with Act 917 and LI 2250. The guidelines specifically address the following (provided in detail in Sub-sections 2.1.6, 2.1.7 and 2.1.8):

- Collectors (Tier 1);
- Collection centres (Tier 2);
- Transporters (Tier 3);
- Treatment facilities (Tier 4); and • Final disposal (Tier 5).

There are also now in place formal handlers - accredited e-waste handling/management companies to receive and manage e-waste in Ghana. The list of accredited e-waste management companies is presented in Appendix 21.

5.0 STAKEHOLDER ENGAGEMENT

5.1 Purpose of Stakeholder Engagement

Stakeholders were engaged as required by good EA practice and also in line with the Ghana Environmental Assessment Regulations, 1999 (LI 1652) and the World Bank's ESS 10 to demonstrate and engender openness in eliciting useful contribution to project design and implementation, improve environmental sustainability and enhance social acceptability of the project. The specific project activity stakeholders will be identified and engaged and also, continuously during the implementation of projects activities as necessary. The citizens engagement plan (Appendix 16) will guide these future engagements.

Stakeholder engagement in the ESMF process helped to identify potential project impacts, develop mitigation measures for adverse impacts, conduct needs assessments and provide recommendations for capacity building. Relevant stakeholders included institutions that will be involved in the project implementation, non-profit/ NGO and local government with varying levels of interest and involvement. The institutions and agencies identified for consultation have either regulatory mandate, oversight responsibility, development promotion or enforcement powers in the energy sector.

5.2 Stakeholder Engagement Methodology

5.2.1 Stakeholder Identification

Relevant stakeholders were identified and categorised under internal stakeholders, regulatory and enforcement institutions district and community level, civil societies and e-waste management companies. Table 5.1 lists the key stakeholders identified under the respective stakeholder categories.

Table 5.1 *Categorisation of Stakeholders*

Internal Stakeholders	- Ministry of Energy (MoEn) - Electricity Company of Ghana (ECG) - Northern Electricity Distribution Company (NEDCo)
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Regulatory and Enforcement Institutions	- Public Utilities Regulatory Commission (PURC) - Environmental Protection Agency (EPA)-Head Office - Institute of Environmental Studies (IES) - Energy Commission (EC) - National Petroleum Authority (NPA)
District/Community level	- MMDAs - o Ga South Municipal Assembly (GSMA); and - o Tamale Metropolitan Assembly (TaMA) - Traditional Authorities
Civil Society Organizations/Ewaste Management Companies	- Green Advocacy Ghana (GreenAd) - Africa Centre for Energy Policy (ACEP)

5.2.2 Stakeholder Notifications and Engagement Planning

Some stakeholder groups identified through the mapping exercise were notified for engagement through phone calls and introductory letters (Appendix 2). Table 5.2 provides the types of notification served and the respective stakeholder.

Table 5. 2 Stakeholder Notification

Type of Notification	Use	Stakeholder
Introductory Letter	Formal letters of introduction were sent to these stakeholders introducing the consultant for the preparation of the EIA for the proposed project and requesting for their involvement in the consultative engagement process.	PURC NPA EC IES MMDAs
Phone call	Phone numbers of these stakeholders were obtained, and key personnel contacted to schedule engagement	PURC EPA NPA EC

After the notification and confirmation of appointment with stakeholders, a team of consultants conducted the consultations with the various stakeholders on the scheduled meeting days and time. The engagements were organized from February to April. These took place in person and via emails and with phone calls as follow-up to clarify information provided at the first engagement.

The engagement schedule showing the respective engagement tool used, the key contact person and their contact details is presented in Table 5.3.

Table 5. 3 Stakeholder Engagement Schedule

Stakeholder	Engagement Tool	Main Contact Person	Position	Contact Details
MoEn	Email/Phone	Bertrand Kwaku Boafo	E&S Specialist	0244400574/ boafoansante@gmail.com
EC	Email/Phone	Dr Vitus Tankpa	Head, SEITA Unit	0201240400/ tankpav@energycom.gov.gh / lastvitus@yahoo.com
NPA	Email/Phone	Gloria Nyanteh	Head, Monitoring and Evaluation	0244936076/ gnyante@npa.gov.gh

PURC	Email/Phone	Gershon Vivor	Director	0557740003 gvivor@purc.com.gh
NEDCo	Email/Phone	Stephen Kpalega Ontoaneyin	Geomatic Engineer	0246019638 stephen.ontoaneyin@vra.com
ECG	Interview/ Email/Phone	Emmanuel Asante	E&S Officer	0276867876 kkasante@ecggh.com
EPA - Head Office	Email	Andriana N K Nelson	Head of EAA Department	0244250575 qandriana@yahoo.com
EPA – IES	Interview/ Email	Gift Tetteh	Acting Director	0501301467 gift_tetteh@yahoo.com
GreenAd	Interview	Bennett Nana Akuffo	Project Manager	0244203401 b.akuffo@greenadghana.com
Tamale Metropolitan Assembly	Email/Phone	Ibrahim Mustapha	Development Planning Officer	024 764 6751 imustapha915@gmail.com
Ga South Municipal Assembly	Email/Phone	Francis Abofra	Development Planning Officer	0244878279/ francisabofra@gmail.com

5.2.3 Engagement Issues and Guides

Institution-specific stakeholder issues were developed and delivered through semi-structured interview questions and discussion guides to elicit initial stakeholder responses. This comprised their opinions, concerns, and expectation as well as the specific issues of relevance and interest to the respective stakeholders. The review of the relevant legislation of incorporation and institutional mandates defined the relevance of the identified stakeholders to the assignment and their areas of interest to identify the key issues for engagement (Appendices 3, 4 and 5).

5.3 Stakeholder Engagement Highlights

The highlights from the engagement with stakeholders has been provided in the Table 5.4. with the full responses in Appendices 6, 7 and 8. Highlights of engagements from previous project documents are also provided in the table with the full responses in Appendices 8.2 and 8.3. These will inform the environmental assessment of the project as well as apprise the environmental management and monitoring plan.

Table 5.4 Major Highlights from Engagements

Stakeholder	Response/Consensus
MoEn	- Capacity building of E&S personnel in the ministry is required - The PIU should encourage information disclosure of E&S policies and framework of beneficiary agencies and that program E&S documents are publicly disclosed
EC	- The Social, Environmental Impact and Technology Assessment (SEITA) Unit is not adequately staffed and needs E&S safeguards capacity building - The EC does not subject its projects to E&S screening but rather ensures all related sector projects undergo screening and have obtained an environmental permit before the EC Licence is granted.

NPA	- Capacity building and safeguards training of E&S personnel is required for the successful implementation of this project - There are various means through which stakeholders can make and submit complaints/ concerns.
PURC	Personnel have sufficient capacity to monitor ECG's operations but ECG requires capacity building
NEDCo	- The development of an RPF is necessary to guide all compensation processes - NEDCo requires support to guide disposal of e-waste generated
ECG	- ECG has a Gender and Social Inclusion Policy in place to advance gender equality, diversity and social inclusion. - There is a comprehensive complaints redress system and also a GRM in place - There is limited capacity of ECGs technical officers at regional and district levels
EPA-Head Office	- A capacity building programme can be developed for the energy sector after a training needs assessment is done to identify key areas that need attention - The EPA faces challenges monitoring the energy sector projects due to inadequate staff and financial restraints
IES	- The training school can design customised E&S safeguards for the MMDAs to support energy sector institutions - Training programmes are offered by the school at a cost
GreenAd	- Informal recycling often results in burning of e-waste to retrieve valuable materials. This in turn releases harmful substances into the atmosphere. - In handling and disposing of e-waste, handlers are often without the appropriate PPEs, but the company has provided safety gloves to its most consistent suppliers.
ACEP	Illegal connections and non-payment for power consumption results in revenue losses for the energy sector and this can be addressed by installing anti-tampered devices that can be monitored remotely.
Tamale Metropolitan Assembly	- The main role of the Assembly in the power sector is to conduct power needs assessment and incorporate this in its Plans; procuring electrical poles etc and liaise with NEDCo to extend electricity to relevant communities. - The Statutory Planning Committee (SPC) of the Assembly screens EIA applications for permits and advises management on development controls. - E&S safeguards capacity building is required.
Ga South Municipal Assembly	- The Assembly's Works Department and Development Unit is responsible for Environmental and Social Safeguards Issues. - The Assembly has a Public Relation and Complain Unit, and community members write to the committee - E&S safeguards capacity building is required.
Traditional Authorities	Traditional authorities in the project components communities will have roles to play when community members and property are affected

6.0 ASSESSMENT OF POTENTIAL IMPACTS AND RISKS

6.1 Introduction

The scope of assessment covered project activities with potential impacts and risks, including large scale acquisition and use of electric and electronic equipment (EEE), installation of

hardware, replacement of post-paid meters with prepayment meters; replacement of obsolete prepayment and post-paid meters and meters with a high incidence of faults; linking of customers to respective distribution transformers, substations and feeders, etc.

The main impacts and risks assessed related mainly to potential improper handling and disposal of large volumes of generated e-waste. The assessment showed the impacts and risks to be of low to moderate significance, as reflected in the EA screening criteria, which placed most of the project activities/sub-subjects at the Initial Assessment and Preliminary EA levels. This is also consistent with the Environmental and Social Risk Classification (ESRC) for the project as moderate under the World Bank ESF.

The potential impacts and risks associated with the project assessed will include the following:

1. Occupational health and safety risks to workers/contractors replacing meters;
2. Community health and safety risks;
3. Waste handling and disposal impacts (including e-waste);
4. Temporary localized power outages;
5. Potential confrontation and sabotage by aggrieved customers;
6. Risks of sexual exploitation, abuse and harassment during meter replacement;
7. Gender and labour related issues;
8. Potential risk of transmission of COVID-19;
9. Risk of inefficient ESMF implementation and outcomes; and
10. Noise and air pollution from heavy duty vehicles that will be used in operations;
11. electrical and fire hazards to homes / communities during connection of customers to distribution transformers and feeders;
12. Elite capture and exclusion of vulnerable groups from distribution of meters
13. Inadequate stakeholder engagement and weak conflict resolution mechanism

The project is, however, expected to be overwhelmingly beneficial to the socio-economic lives of Ghanaians country wide. The key beneficial impact will be the opportunity for E&S safeguards capacity building for energy sector institutions to enhance compliance with required standards and regulations, while ensuring project sustainability. The other potential benefits will include:

1. Efficient and reliable supply of power;
2. Boost local economies;
3. Local employment opportunities during implementation;
4. Enhanced income to suppliers and contractors;
5. Improved health service delivery; and
6. Improved teaching and learning.

6.2 Methodology for Assessing and Ranking of Potential Impacts

The likelihood of occurrence of adverse impacts and risks associated with the project and implementation of the project activities as well as the level of significance was evaluated, based on a modified methodology for assessing and ranking impacts adapted from the ISO 14001 Environmental Systems Handbook (Whitelaw, 2004). The ranking system used eight assessing criteria, qualitatively scoring 'low', 'medium/moderate' or 'high' for ranking the likelihood of occurrence and significance of impacts. The eight criteria used are listed and further outlined below:

1. Knowledge about similar/past projects or project environment;
2. Level of risk of impact;
3. Actual or potential nuisance;
4. Spatial scale of impacts (spatial extent);
5. Timescale of impacts (temporal extent);
6. Inducing future incompatible activities; 7. Legislative requirements and standards; and
8. Information availability.

a. Knowledge of Similar/Past Projects or Project Environment

The knowledge of similar projects or various aspects of a project or in relation to the project environment were used. Aspects and related activities that have had environmental and social problems in the past would have a higher score, since they would have a higher likelihood of occurrence as compared to incident-free record of other activities. Likewise, aspects that generated complaints in the past would be deemed significant.

b. Level of Risk of Impact / Likelihood of Impact Occurrence

This looked at the probability of impact (or risk) occurrence (i.e., likelihood), and the likely consequences should an incident occur. It also assessed concerns such as whether there could be associated risks before and even after mitigation measures are taken (residual risks).

c. Actual or Potential Nuisance

Actual or potential damage or nuisance that the impact could cause surrounding areas or recipients, or any potential nuisance resulting from the proposed activities to the public or other sensitive receptors within the area of influence. Also considered impacts that are direct or indirect, reversible or irreversible.

d. Spatial Scale of Impacts

The spatial extent of impacts considered were whether local only (spatially limited), or community-wide, or district-wide effects or at the national scale.

e. Time Scale of Impacts

The duration over which impacts would occur or would be experienced (duration of exposure). Impacts could be intermittent or occasional, or frequent, persistent, but of less acute or long-term consequence (less serious) than effects with serious and/or long-term consequences.

f. Future Induced Activities

The likelihood of induced activities or adverse situations that may arise (could be cumulative) in the future due to the presence of the project, and what the nature or scale of these potential activities or situations could be (social- or environmental- or health-wise). Any likelihood of future incompatible activities or situations in the area of influence that may affect the objective or environmental and social management goals of the project.

g. Legislative Requirements and Standards

The available legislation, policy, standards/discharge limits or guidelines in place to facilitate evaluation of significance and management of impacts; where available the relevant aspects or impacts were considered less significant, or otherwise considered significant.

h. Information Availability

Where there is lack of information to base a satisfactory assessment on, the relevant aspect or impact was considered significant. In other words, knowledge gaps in the assessment meant it would be based on inadequate information/data, potentially introducing a high degree of uncertainty, hence an evaluation of high significance.

6.3 Beneficial Impacts

Electricity is a critical need for the economic and social development of people, as well as generally contributing to improving quality of life, hence increasing access to electricity is considered a high-priority objective. Ghana continues to make significant progress in expanding access to electricity. Less than 24% of the population had access to electricity in 1990, however, by 2017 the access rate had increased to about 83% - with the rural and urban areas taking 50% and 91% respectively.

Though the government was unable to attain its target of universal access of 100% in 2020, Ghana is seen as one of the African countries that are most likely to achieve 100% universal access by 2030. This project will make a significant contribution toward the target. It will improve the access rate and increase the power demand. The specific benefits will include the following:

1. Efficient and reliable supply of power;
2. Boost local economies;
3. Local employment opportunities during implementation;
4. Job opportunities and enhanced income to suppliers and contractors;
5. Improvement in health service delivery; and
6. Enhancement in teaching and learning.

6.3.1 *Efficient and Reliable Supply of Power*

Between 2000 and 2019, electricity generation capacity increased at a rate of 6.4% a year from 1,358MW to 4,695MW. Supply capacity has nearly doubled since the 2013 power crisis. At the same time, system peak demand grew at a 4.6% annual rate from 1,161MW to 2,804MW. The increase in power generation supported Ghana's economy. The economy grew in real terms by 6.67% a year between 2011 - 2019. Electricity demand is estimated to have grown at 7%-10% a year since 2010. Despite energy generation being in excess of demand, power remains expensive and unreliable, and has become a constraint on doing business in the country. This project aims at increasing efficiency of investments and supporting the implementation of the broader ESRP to reduce commercial losses in the electricity distribution and improve performance of the distribution utilities.

6.3.2 Boost Local Economies

Enhancing the reliability and availability of electricity supply in ECG operational districts under the project will improve the general business environment, especially for industry and MSMEs, including cold stores, cottage industries, saloons and barbering shops, which will safeguard the income levels of persons engaged in such businesses, and the economy as a whole. Mobile money services (the single most important contributor to Ghana's financial inclusion drive), which enable easy transfer of money for business activities and transactions, will also be improved, since phones used for the services require a regular power source to charge them.

6.3.3 Local Employment Opportunities

The project components would require recruiting additional workers such as for transporting and offloading of meters, and other skilled and unskilled labour requirements. The presence of workers will create an opportunity for food vendors, drivers, motorcyclists, shop owners and other business operators in the communities to make a good income.

6.3.4 Job Opportunities to Suppliers and Contractors

Local suppliers of construction materials, such as poles and cables/conductors, as well as construction machinery and ancillary equipment, will be engaged at various stages of the project. Technical studies and designs, investigation of the project environment, and construction contracts will also involve some Ghanaian consultants and electricians/contractors. These opportunities promise to significantly enhance the income levels of these largely local suppliers/contractors.

6.3.5 Improvement in Health Service Delivery

The availability of reliable electricity supply is a critical enabling factor in supporting and improving health systems and healthcare delivery services. The dependence on electricity is of primary importance in health facilities, for example in sterilizing medical devices, refrigerating medication, supplies and sensitive consumables, and for conducting certain medical operations and in some health-relevant service outputs. This can increase access to health information through television and also investments in supporting infrastructure are warranted to achieve the health SDGs as a result of regular and reliable electricity supply.

These outputs can improve health outcomes of patients such as infection control, facility effectiveness and hygiene, conducive staff working conditions at facilities level and also increase the probability of children receiving critical vaccinations and pregnant women receiving antenatal care. These ultimately contribute to better population health outcomes. Health facilities, particularly CHPS compounds will improve with enhancements in electricity supply.

6.3.6 Enhancement in Teaching and Learning

In this age of technology, where educational subjects such as computer science is taught in every school at all levels, there is an absolute need to have access to electricity to power computers for teaching and learning. The lack of electricity will mean students will have to be taught without practical demonstration compared to their counterparts in communities with electricity. This leaves the less privileged students (in communities without power) to a major disadvantage since they will all be expected to write the same examination. The lack of electricity also limits the ability of students to study at night.

The implementation of the project will give teachers and pupils/students of beneficiary communities the opportunity for improved teaching and learning. This means continuous power at night-time providing additional hours for study, and extended classroom hours (enabling early morning and after-dark teaching). It will also result in increased time for reading and homework, improved literacy, conducting laboratory experiments, enabling schools to expand vocational offerings in engineering, welding, metal work, carpentry and mobile learning.

6.4 Potential Adverse Risks and Impacts

The project activities could lead to vegetation clearance, increased noise level, and dust emissions from construction vehicles/machines that will be deployed, possible traffic obstruction, and fire incidents. Such disruptions may be a nuisance to other persons and properties in the neighbourhood of the project works. The safety of power sector workers (especially technical workers) and the public may be affected during the installation of meters, new feeders, and the connection of new customers.

An important risk associated with the proposed works will be occupational health and safety risks, such as exposure to physical hazards from the use of heavy equipment and cranes; trip and fall hazards; exposure to dust and noise; falling objects; work in confined spaces; exposure to hazardous materials; and exposure to electrical hazards from the use of tools and machinery.

Impacts during the operational phase will include risk of insulation oil leaks from transformers and switchgears; risk of gas leaks from modern gas-filled switchgears (sulphur hexafluoride); impacts of noise from transformers, and associated equipment; and impacts of waste generated from engineering and maintenance works.

6.4.1 Occupational Health and Safety Risks

Potential occupational health and safety hazards could be associated with the following:

- Electrocution from energized service cables and meter parts;
- Falling from height;
- Exposure to electrical and electronic wastes
- Risk of electrical fires and its impacts

Risks of Electrocution from energized electrical wires

The contractor's workers/ ECG/NEDCo technicians may be exposed to electrocution from contact with energized electrical wires during installation of new meters and replacement. This risk could be heightened in the event that:

- The standard due diligence checks are not done to ensure that only trained and certified workers are allowed to install or replace meters.
- The standard checks are not done to confirm that service lines or electrical wires of all meters being worked on are completely isolated or de-energized.
- Strict adherence to specific safety and insulation standards has not been ensured; and
- There is no clearly defined health and safety plan to provide specific guidance on training, safety measures, personal safety devices, and other safety precautions.

Risks of Falling from Height on Ladders

The contractor's workers as well as technicians of ECG/NEDCo could be exposed to occupational hazards when working from height during meter installation/replacement as a result of the following failures to:

- Test structures for integrity prior to undertaking the works;
- Implement a fall protection program that includes training in climbing techniques and use of fall arresters, inspection, maintenance, replacement of fall protection equipment;
- Remove signs and other obstructions from poles or structures prior to undertaking works;
- Use a second (backup) safety strap when operating power tools at height; and
- Use an approved tool bag for raising or lowering tools or materials to workers on structures.

Risk of Exposure to Electrical and Electronic Waste

The risk of exposure to toxic substances in electronic and electrical waste is a significant occupational hazard concern. This type of waste primarily arises from the disposal and breakdown of old meters and related electronic equipment which are being replaced. Workers may be exposed to hazardous chemicals found in electronic waste such as lead, mercury, cadmium, and arsenic, which are commonly used in the manufacturing of meters and other electronic apparatus.

Potential exposures to heavy metals found in this e-waste include dermal contact and inhalation during their packaging, transportation, and storage. The effect of such impacts may be increased by climatic conditions such as wind, which may increase the chance of unintended drift, or high temperatures, which may deter the use of personal protective equipment (PPE).

Risk of Electrical Fires and its Impacts

Electrical fires are usually cause when there is inappropriate wiring or using substandard materials in wiring. The use of inexperienced electrical technicians and or the use of

substandard electrical wires could cause fires during installation or replacement of meters. Workers could suffer injury and even to a larger extent fatality.

6.4.2 Community Health and Safety Risks

Community health and safety impacts likely to be associated with project activities will include dust, noise, and vibration from construction vehicle transit. The operation along live power distribution lines and substations may generate the following industry-specific impacts:

1. Electrocution;
2. Electrical Fires

Risk of Electrocution

Inappropriate and substandard wiring can cause short circuit which may lead to energizing conducting items such as roofing sheets, TV antennas, etc. Direct or indirect contact with any of these items could cause electrocution and electrical shock to the customers. Customers could be in direct contact with energized parts of the meter that are exposed during recharge of meters. This will primarily arise from substandard installation.

Risk of Electrical Fires

Incorrect wiring practices such as improper connections, use of incorrect wire types, and failure to adhere to wiring code can lead to overheating and eventually fires. Utilizing low quality or non-compliant materials that do not meet industry standards can compromise the electrical system in the meter. Substandard materials may not be able to withstand the electrical load and environmental conditions leading to degradation, overheating and electrical fires. Electrical fires risks could also be triggered by using unprotected meters installed outside of homes, offices and business premises, exposing such meters to the elements of the weather (i.e., excessive sunshine, rain etc.).

Electrical fires can lead to significant damage to properties including destruction of homes, businesses, other infrastructures. There could be disruption of electricity distribution services if the fire is widespread and affecting the distribution network.

6.4.3 Waste Handling and Disposal Impacts

The main waste stream of concern arising from the project are the disposal of generated ewaste (waste electrical and electronic equipment (WEEE)) and other wastes.

Waste Electrical and Electronic Equipment

Meters and their enclosures contain lead, brominated fire retardants, and cadmium in their printed circuit boards. Obsolete meters disposed of indiscriminately could pose risks to human health and the environment.

E-waste generated in the energy sector would include decommissioned service cables and meters. These could be piled up in the warehouses of the power distribution companies, where there are no appropriate methods for disposal. This could pose a major issue of e-waste

accumulation as the obsolete meters replaced would add on to the existing storage of old meters, and other e-waste components.

In the absence of a robust disposal mechanism for WEEE, these wastes could end up in the hands of informal e-waste handlers who characteristically apply environmentally polluting methods for dismantling and salvaging some valuable components and metals. These crude methods, including the application of heat or fire readily expose the recyclers and the immediate environment to hazardous chemical fumes and heavy metal (especially lead) poisoning. These hazardous substances could leak into the ground/soil and potentially leach into groundwater and contaminate it.

Other Wastes

Solid waste disposal practices, especially open dumping (e.g., indiscriminate waste disposal/littering and burning) are a source of concern, though a common habit and means of refuse disposal for plastics, leftover food, paper, and cans, etc. Solid waste generated by workers could litter the communities in which they are working and other places of installation works. Improper solid waste disposal could result in odour nuisance from putrefying organic waste leading to production of vermin, which could be vectors for diarrhoeal and other communicable diseases. Plastic waste could create unsightly surroundings and also collect water, which would promote mosquito breeding with increased incidence of malaria. The waste could also be burnt, which may produce toxic fumes injurious to public health. Waste burning could result in bushfire, destroying farms and property.

Open urination and defecation by workers, in the absence of proper and adequate sanitary facilities, could also be a source of concern. Exposure to human excreta increases the risk of sanitation-related diseases such as cholera, diarrhoea, and typhoid (Osumanu, Kosoe and Ategeeng, 2019). In addition, environmental factors such as floods also play a role in transmission by carrying and depositing excreta in surface water, thereby contaminating it and amplifying the conditions to cause an outbreak (Giribabu, et al., 2019).

6.4.4 Temporal Localized Power Outages

Installation and replacement of meters per ECG's and NEDCo's procedures are required to be done on de-energized line. The primary cause of the temporal outages during the meter installation and replacement is the need to disconnect the power supply for safe removal and replacement of meters. The duration of the outage may last few minutes to several hours depending on the complexity of the installation and replacement process. This localized outage may disrupt business activities in the affected areas and can be compounded by the lack of appropriate schedules and communication to the customers. However, these outages will be restricted to areas that meters are being replaced.

6.4.5 Potential Confrontation and Sabotage by Aggrieved Customers

Replacement of obsolete prepayment and post-paid could be met with resistance from customers. This could reach a tipping point and result in agitations. Aggrieved youth could prevent personnel for ECG/NEDCo from entering their communities or town resulting in potential confrontation. This could also lead to sabotage of the project and cause harm to personnel and destruction of public properties such as new pre-paid meters.

6.4.6 Risks of Sexual Exploitation, Abuse and Harassment

Violent behaviour towards women is rampant globally with more than one out of three women having experienced some kind of physical or sexual violence in their lives. This includes intimate partner violence such as physical, sexual and/or emotional violence. The case is no different in Ghana where an estimated 13% to 61% of every partnered women having experienced some violence from current or previous partners; strangers, teachers, schoolboys, other family members and acquaintances. Social (negative norms), economic (poor economic empowerment) and legal factors have been found to render women powerless and unable to reject inappropriate advances without facing intimidation or violence.

There could be incidents of sexual exploitation and abuse (SEA)/sexual harassment (SH) during the distribution and installation of meters in homes and offices. This could especially be when a couple of power sector workers or contractor's workers migrate into the project communities and localities, where the pool of technical expertise required may not be available in beneficiary communities. The uneducated women who may lack the necessary project information in these communities might be lured into undesired sexual activities by the ECG/NEDCo technicians/contractor's workers, who might ask for sexual favours before the meters are installed in their homes.

Project-level factors include likely interaction between project staff/contractors and project beneficiaries; male project staff/workers and female staff to be recruited under the ECG PIU and MoEn PCU and consultants, contractors and workers to be engaged for various project activities. These women could potentially face sexual abuse, discrimination and sexual harassment issues.

6.4.7 Gender and Labour Related Issues

Marginalization of women and other vulnerable groups in employment during the implementation of projects such as the replacement of the post-paid meters for non-strategic MMDAs could easily occur. Men are often given preferential employment, especially in the construction phase. Where women are employed, they are usually few and often may have to capitulate to sexual abuse by colleague workers or superiors. Sexual favours may be solicited for employment.

Other gender and labour issues of concern could be as follows:

1. Lack both adequate and dedicated sanitary facilities for use by women and other vulnerable groups;
2. Persons with disability (PWD) may be often excluded in project designs and construction and discriminated against, preventing such vulnerable persons from employment; and
3. Incidents of force labour and compulsory overtime work might easily occur during project activity implementation.

6.4.8 Potential Risk of Spread of HIV

Work and lifestyle factors that expose workers to the risk of HIV infection according to ILO Guidelines (and consistent also with the National Workplace HIV/AIDS Policy) are:

- High mobility, resulting in long periods spent away from home and family;
- Male-dominated profession and a predominantly masculine environment, with openness to occasional sexual relations;
- Stress due to working and living conditions; and
- Lack of information about HIV and AIDS.

Others may include:

- Young women lured into sexual relationships due to poverty and unemployment;
- Some women and men turning into prostitution as a new lifestyle; and
- Non-disclosure of HIV status due to stigmatisation and possible discrimination or victimization, who continue to engage in multiple, unprotected sexual relations.

Most of the workers would travel without their families and could likely engage in casual sex with temporary sexual partners, including young ladies and teenagers. Commercial sex workers could also be attracted to the high earning workers. This could potentially expose people to promiscuous lifestyle and the increased incidence of sexually transmitted infections (STIs), including HIV.

6.4.9 Potential Risk of Teenage Pregnancy

The risk of teenage pregnancy arising from project activity implementation (both the construction and operation phase) could be as a result of the high disposable income by workers (i.e., high earning workers) in the area that generally has few industries and many employed youths. Generally, causes of teenage pregnancy could be attributed to:

- Poverty;
- Loss of livelihood by parents;
- Parental neglect and peer pressure; and
- Sexual abuse and exploitation (including rape), etc.

Adolescents from poor homes could be lured into sexual relationships by the high earning workers as a means of getting some money to fend for themselves, especially where parents are not able to provide for their livelihoods. The presence of migrant workers could entice the teenagers in the communities around and lured into sexual relationship with them.

Due to poverty and lack of gainful employment, some parents are unable to cater for their children, including adolescent and school-going girls. This could even lead to dropping out of school. Parental neglect could easily lead to adolescent girls being influenced by their peers to form acquaintances with some workers who would in turn take advantage of their vulnerabilities and enter into sexual relationships with them. Teenagers could also be sexually abused and exploited by such workers and due to their innocence could result in pregnancies.

Teenage pregnancies could lead to lower educational achievement, poor health issues, developmental problems in children from teenage mothers and poverty.

6.4.10 Potential Risk of Transmission of COVID-19

The highly contagious COVID-19 infection could readily spread among all group of construction workers once an infected worker is present at the workplace or nearby communities. It is, however, known to be most contagious, spreading extremely fast in

confined areas, and usually in cold conditions. An infected worker could also readily transmit the virus to family members and others coming into contact. This has a potential of spreading to nearby communities.

The measures for containment and prevention are known as provided in the Government directives on COVID-19 protocols. Compliance is, however, a major challenge and a source of risk to another wave of infection. Other risk factors include:

- Lack of knowledge and nonchalant attitude;
- Unhygienic personal habits and practices promoting infection;
- Failure to allocate budget and make investment for COVID-19 protocols and other prevention measures; and
- Affected workers concealing infection due to possible stigmatization.

The consequence is that the entire workforce of contractors/ ECG or NEDCo technicians could go down with the infection, hospitalized or in confinement, with possible deaths. This could severely disrupt the construction work and project completion schedule.

Meter replacement activities will however, be conducted largely in the open, which is not favourable for fast transmission, and also under temperature conditions of 28°C and 36°C and abundant sunlight. Thus, the meter replacement phase is less likely to provide conditions for any significant transmission of the virus.

6.4.11 Risk of Inefficient ESMF Implementation and Outcomes

The following could be the main sources of risks to the effective implementation of the ESMF:

- Lack of E&S safeguards awareness and commitment on the part of management;
- Absence of clear E&S safeguards policy and institutional systems; • Lack of E&S safeguards capacity of personnel in relevant departments; and
- Potential weak enforcement resulting in poor ESMF implementation.

Electricity Company of Ghana

There is limited capacity of ECG's Technical Officers at the regional and district levels on E&S safeguards, and to take up responsibilities for E&S management commitment, and availability for safeguards implementation and compliance. Training tour placements and capacity building opportunities under this project earmarked for specific technical officers could be diverted and exploited by high senior management personnel, with no tangible beneficial outcome to the company.

Though ECG has an E&S policy and systems in place (in the form of an ESMS), the framework supposed to guide E&S assessments are not readily available or accessible on the websites. There could be challenges with publicity, general awareness, and broad-based involvement of technical staff in E&S safeguards application, arising from lack of integration of E&S safeguards issues into all relevant areas of ECG's operation.

Though ECG operates a gender and social inclusion policy (GSIP), its GRM is silent on how specifically to deal with sexual exploitation, gender-based violence and harassment cases.

However, the procedures for dealing with GBV/SH is included in the Stakeholder Engagement Plan under their ESMS, and workers' Collective Bargaining Agreement (CBA).

Northern Electricity Distribution Company

NEDCo has no E&S safeguards system in place to deal with E&S safeguards and resettlement (compensation) issues. It relies on VRA's E&S policies and has no in-house expertise and experience with such E&S safeguards instruments.

The Engineering Services Department assumes additional responsibility for E&S issues when the need arises, such as when new sites are being acquired for substation construction. Also, with power (distribution) lines construction, NEDCo is constrained to rely on the available utility right of way - an ad-hoc approach to E&S safeguards issues. The company does not have GRM in place or procedures for gender and social inclusion principles. It also cannot be said to explicitly commit to any sexual harassment and gender-based violence policy, though NEDCo's HR Policy document has a section on sexual harassment for both male and female in the workplace.

NEDCo is thus handicapped due to the absence of E&S safeguards personnel, availability of requisite capacity and a department/unit to handle E&S safeguards assessment, supervision, and resettlement issues in its operations. The absence and/or inadequacy of capacity and systems will not enable the successful implementation of the ESMF. The need to fill in these gaps through enhanced capacity building opportunities and training tour under the ESMF for deserving technical officers could, however, be frustrated, if these are diverted and exploited by high senior management personnel; since that would bring no tangible beneficial outcome to the company.

Ministry of Energy

The energy sector's E&S processes are fragmented along institutional lines. Efforts to integrate and streamline E&S issues into development processes are being attempted through the draft Health, Safety, Security and Environment Policy. However, commitment level appears rather low.

The Ministry's E&S coordination functions in the energy sector appears inadequate, perhaps because it is undefined. The GESRP did not provide required mechanism for institutional collaborative arrangement within the sector with regards to E&S assessment. Also, the capacity of the two-person HSSE Unit is inadequate to take on the energy sector E&S coordination and collaboration roles, and responsibilities with the technical directorates on HSE issues. The need to enhance the capacity of personnel in the HSSE Unit could be undermined, if training tours and capacity building opportunities earmarked under this project are diverted and exploited by high senior management personnel. This would deny the ministry of the expected tangible beneficial outcomes from the capacity building program.

Public Utilities Regulatory Commission

The ESPM Directorate has inadequate capacity on E&S safeguards. The Directorate lacks the ability to handle E&S safeguards management commitment and supervision of compliance on

safeguards implementation. However, training tour placements and capacity building opportunities made available for deserving E&S safeguards officers of the ESPM Directorate could be exploited by high senior management personnel, bringing no tangible beneficial outcome to the commission.

Energy Commission

The EC has no functional E&S policies and systems that guide planning and project E&S safeguards decisions. Although it is mandatory for all sector-related projects to obtain an environmental permit from the EPA, the absence of an E&S policy and system does not allow EC to actively partake in the E&S screening, scoping and EA review processes (in collaboration with EPA).

There are only four personnel in the SEITA unit with no E&S safeguards capacity and no existing E&S capacity across all operational levels (regional/district). The training tours and capacity building opportunities earmarked for the E&S safeguards personnel in the SEITA unit could be undermined, if diverted and exploited by high senior management personnel, with no tangible beneficial outcome to the commission.

National Petroleum Authority

The NPA has an existing HSSE Unit in place, however, it is not fully functional to facilitate sector project EA processes for decision making and therefore requires training and capacity building. The capacity building opportunities, especially training tours earmarked for the personnel in the HSSE Unit could, however, be undermined, if diverted and exploited by high senior management personnel, which will bring no tangible beneficial outcome to NPA.

Tamale Metropolitan Assembly

The Assembly solely relies on the EPA to address all E&S safeguards issues, since there is no E&S safeguards policy or system in place. There is also no designated department in the Assembly responsible for E&S safeguards and related issues. The Social Welfare and Community Development Department appears to assume responsibility for E&S safeguards issues, though it is not even represented on the Statutory Planning Committee (SPC) that screens E&S applications for environmental permit from the EPA. The department comprises of 6 personnel and are considered inadequate, as well as lacking the capacity to appropriately handle E&S safeguards issues.

The capacity building opportunities, especially training tours earmarked under the project for the technical personnel in the Assembly to handle E&S safeguards issues could, however, be undermined, if diverted and exploited by high senior management personnel, which would bring no tangible beneficial outcome.

There is also no functional Stakeholder Engagement Plan to facilitate the involvement of relevant stakeholders during planning of land use schemes and zoning decisions. Also, the Assembly does not have GRM to address complaints, including sexual harassment and genderbased violence.

Ga South Municipal Assembly

The Assembly relies and collaborates with EPA on processing EA applications (by proponents). The Assembly does not have a documented E&S safeguards system as guiding framework for its planning and development decision processes as well as for stakeholder engagement activities. Personnel at the Works Department and Development Planning Unit have inadequate E&S safeguards capacities.

The Assembly does not have a Stakeholder Engagement Plan (SEP) to facilitate stakeholder activities, and GRM to handle any sexual harassment and gender-based violence complaints.

The capacity building opportunities, especially training tours earmarked under the project for the technical personnel in the Assembly to handle E&S safeguards issues could, however, be undermined, if diverted and exploited by high senior management personnel, which would lead to no tangible beneficial outcome.

7.0 ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES

The assessment of project activities revealed the potential adverse impacts and risks to be generally minor and of localized physical impact footprint, and with low to moderate significance. This is consistent with the moderate ESRC for the project under the World Bank ESF, as well as with the screening criteria (in the ESMF) under the EA Regulations, which places most of the sub-subjects at the Initial Assessment and Preliminary EA levels.

Nonetheless, relevant mitigation measures have been provided to ensure environmental soundness, social acceptability, health and safety protection and sustainability of the project. Most of the measures will be implemented during project execution, except the where RAP is required and for the E&S capacity building and institutional systems support (which could precede execution of project components). Other measures will also aim at enhancement, especially, of beneficial impacts. The mitigation measures defined to address the evaluated impacts and risks include:

1. Occupational health and safety measures;
2. Community health and safety measures;
3. Waste handling and disposal measures;
4. Traffic and accident prevention measures;
5. Public involvement in project decision-making;
6. Sexual exploitation and harassment prevention measures
7. Gender and labour safeguards measures;
8. HIV prevention measures;
9. Teenage pregnancy prevention measures;
10. COVID-19 prevention measures;
11. E&S capacity building and system requirements.

7.1 Occupational Health and Safety Measures

The following occupational health and safety measures will promote the wellbeing and workers welfare of workers during the implementation of project activities:

- Workers will be screened to ascertain their fitness with respect to the job requirements before employment;
- Hand gloves will be provided for workers when digging and be required to use them;
- Flagmen will be employed to direct traffic at worksites;
- High Visible Clothing (HVC) will be provided for workers for easy identification by on coming vehicles;
- Poles will be offloaded away from curves to avoid potential accidents;
- Tools will be kept in a well-organized manner in a covered toolbox;
- Workers will be required to observe a minimum distance of 12m from erected poles during stringing; and
- Group lifting of poles by workers will be ensured on-site.

Furthermore, the following specific measures will be instituted to address the risks posed by live power lines; working at height; electric and magnetic fields; and exposure to chemicals.

Energized Service Cables and Meters Parts

The following prevention measures will be adopted for energized parts risks during works:

- Training/certification of workers to install, maintain, or repair required electrical equipment;
- De-energizing all energized parts before work is performed on, or in close proximity, to the lines;
- Ensuring that live-wire work is conducted by trained workers with strict adherence to specific safety and insulation standards;
- Implementing Standard Operating Procedures (SOPs) for live-line works which among others, prohibit workers from approaching an exposed energized or conductive part even if properly trained; and
- Developing a Health and Safety Plan which prescribes specific training, safety measures, personal safety devices, and other precautions to cover all works.

Working at Height on Poles and Structures

The following prevention measures will apply when working at height:

- Testing structures for integrity prior to undertaking work;
- Implementing fall protection program that includes training in climbing techniques and use of fall arresters; inspection, maintenance, and replacement of fall protection equipment; and rescue of fall-arrested workers, among others;
- Installing fixtures on electric pole components to facilitate the use of fall protection systems;

- Hoisting equipment will be properly rated and maintained and hoist operators properly trained; and
- Enforcing the use of a second (backup) safety strap when workers are operating power tools at height.

Exposure to Toxic Chemicals in Electrical and Electronic Waste

The following measures specific to the handling and storage of e-waste will be implemented:

- Train workers on handling of obsolete and damaged meters;
- Developing procedures for e-waste handling/storage which will include appropriate ewaste management procedures and the use of PPE;

Electrical Fires and its Impacts

To prevent electrical fires during installation and replacement of new meters, the following will be implemented:

- Using trained and certified technicians for meter installation and replacement activities;
- Strict compliance to Energy Commission's code of wiring and ECG's procedures in meter installation;
- Ensuring that the best quality materials are procured for the meter installation activities.

7.2 Community Health and Safety Measures

Electrocution

To prevent electrocution to customers:

- Services lines and meter wiring will be done to meet the industry standards developed by Energy Commission and ECG's/NEDCo's standard wiring practices.
- There will be strict supervision of technicians installing meters to comply with the above.

7.3 Waste Handling and Disposal Measures

All discarded EEE (or WEEE) will be accounted for and taken into the custody of ECG, so that these do not end up in the hands of informal recyclers. Other specific measures to ensure public safety and general health and environmental protection from poisoning and pollution include the following:

- Discarded EEE from old or damaged transformers and meters will be auctioned to accredited, formal e-waste recyclers/companies, in accordance with the provisions of the:
 - Hazardous and Electronic Waste Control and Management Act;
 - Hazardous, Electronic and Other Wastes (Classification), Control and Management Regulations; ○ Technical Guidelines on Environmentally Sound E-Waste Management for Collectors, Collection Centres, Transporters, Treatment Facilities and Final Disposal; and

- The ground surface underneath the pole-mounted transformers will be underlain with lined plastic sheets and chippings to absorb any oil leakages and prevent transformer oil contact with the soil.

Colour coded bins for various kinds of waste collection will be provided at vantage points at a time along the construction corridor/RoW for disposing of the different types of waste appropriately. The colour coded bins will include the following:

- Yellow – Plastics and cans
- Black – Other waste
- Red – E-waste

The plastics and cans will be sold to recycling companies while the other waste will be collected and disposed of at the final waste disposal sites of the respective MMDAs. Mobile toilets will be provided at a vantage location along the RoW at a time for workers. This will be disposed of at the respective district sewage disposal sites.

Adequate and dedicated mobile toilets will be made available at designated locations for use by workers to curb open defecation and urination.

7.4 Temporal Localized Power Outages

The following measures will be implemented to minimize the effects of power outages on customers including residents and business operators:

- Scheduling of outages during times of low demand such as mid-morning, and early afternoons. Special considerations such as alternative supply will be done for critical institutions such as hospitals, etc.;
- advance notification shall be issued to customers not later than 72 hours in accordance with the PURC requirements;
- Ensuring that technicians are efficient and work within time.;
- Ensuring efficient customer support line for outage management. In this regard, customers will be sensitized on the grievance Redress Mechanism (GRM) for the project.

7.5 Public Involvement in Project Decision Making

Awareness creation and sensitization of community members on the replacement of obsolete prepayment and post-paid meters and other project components for their buy-in prior to implementation will be the standard practice. The Citizens Engagement Plan (Appendix 16) will guide the awareness creation and sensitisation of beneficiary communities.

7.6 Sexual Exploitation and Harassment Prevention Measures

ECG/NEDCo will enforce its GSIP, which commits to zero tolerance of sexual harassment and monitor the policy performance on preventing and providing adequate and timely responses to SEA/SH occurrences based on the following principles, measures and activities to be adopted by ECG/NEDCo:

- Provide adequate information about the project to community members to ensure women are not unduly taken advantage of;
- Communicate its zero-tolerance policy to sexual exploitation and abuse or sexual harassment,
- Provide functional GRMs, with adequate provision for referral and handling of SEA/SH cases, such as a GBV service provider, given that the general GRM may not be appropriate for reporting or handling the sensitivities associated with SEA/SH cases. /
- Undertake swift victim-centered corrective actions to ensure appropriate accountability of the perpetrator in the appropriate manner while respecting the alleged perpetrator's due process rights;
- Conduct mandatory trainings, Workplace communications campaigns, and Project communications campaigns through the Contracting Entities on its SEA/SH policies;
- Undertake interventions/ actions which allow them to determine their readiness to address SH/SEA risks. These activities to be implemented will cover the following: action plans, people survey, ad-hoc surveys (corporate or targeted), data analytics, and reporting.
- Require contractors and workers of ECG to sign a workers' Code of Conduct including prohibition and sanctions on GBV.

An SEA/SH policy would be prepared and implemented by the contractors based on the following principles:

- Workers who engage in sexual relations with under-aged persons and gender-based violence would be immediately suspended and made to submit to the due process of law;
- Contractors will be required to collaborate with communities through the grievance redress mechanism to determine GBV/SEA/SH cases;
- Awareness programmes would be organised among workers and local community members, and made aware of the GRM process in place; and
- The ultimate responsibility for women and children's safety from sexual abuse lies with the contractor.

7.7 Gender and Labour Safeguards

A Labour Management Plan hinged on the following principles and designed as part of a contractor's contractual obligations and relying on international labour standards:

- Payment of fair, realistic and adequate compensation/remuneration packages for work done, especially to local staff;
- Preferences in terms of compensation mechanisms, such as replacement land or alternative access to natural resources rather than in cash will be explored for vulnerable groups and the elderly;
- Promotion of collective bargaining agreement;
- Provision of a safe working environment;
- Prohibition of forced labour; and
- Prohibition of excessive compulsory overtime duties.

A combination of tools will be employed to ensure effective operation of the preventive measures. These tools will involve the following:

- Issuance of employment contract to all categories of workers, including casual staff, and as part of the requirement, employers/contractors will sign to protect human rights and entitlements of the employees (with copies of contracts filed and made available for inspection periodically);
- Extensive education on human rights protection provided to contractors' team, while management signs to a code of conduct incorporating human rights clauses; and
- Cases of all human rights abuses will be filed with the offices of the Human Resource Department of various facilities during operations.

Gender equality mechanisms such as – Development of a quota system to employ female applicants and intensive education for all locals to allow females to avail themselves for construction activities as well as unskilled labour during operations, will be incorporated into the project implementation and contracts design to ensure fair representation is given to all qualified women applicants for employment.

Each project assessment process shall make provision for women and women group's participation in stakeholder consultations, and separate women-only meetings that provide suitable timing for the engagement sessions to avoid attendance clashing with other priorities (National Gender Policy, 2015). Adequate information will be provided to ensure fair compensation is given to women whose land might be affected during the project implementation. Project designs and construction shall provide improved and separate sanitary facilities for men, women and vulnerable persons, as well as ramps and other access aids for PWD (Persons with Disability Act, 2006 (Act 715).

7.8 HIV Prevention Measures

The Ghana AIDS Commission Act, 2016 (Act 938) and National Workplace HIV and AIDS Policy make provision for protection of Persons Living with HIV (PLWHIV) such as nondiscrimination, right to health, education, privacy and confidentiality, freedom of movement, disclosure of confidential information and prevention of HIV and AIDS spread among workers.

In line with the above and the Prevention and Control of HIV and AIDS Act of 2007, workplace policy on HIV/AIDS derived from ILO Guidelines would be prepared and implemented for the activities based on the principles set out below:

- Awareness creation among workers on HIV and AIDS risks and dangers through preventive program;
- HIV/AIDS prevention clauses incorporation in workers' contracts;
- Refusal of employment or dismissal will not be based on HIV status;
- No discrimination or stigmatization against workers on the basis of real or perceived HIV status will be entertained; and
- Information on HIV status of workers will be handled with due care and confidentiality.

7.9 Teenage Pregnancy Prevention Measures

A workplace policy would be prepared and implemented for the project based on the principles set out below:

- Workers who have sexual relations with under aged persons will be immediately suspended;
- A guilty worker will be dismissed and reported to public authorities for due process of the law, besides requirement for adequate compensation to the victim;
- Awareness creation among workers will be conducted with support to –
 - The Health Directorate on teenage pregnancy and HIV campaigns and;
 - Print and distribute awareness leaflets
- Teenage pregnancy prevention clauses incorporation in workers' contracts.

7.10 COVID-19 Prevention Measures

The project implementation (both at construction and operation phases) will respond appropriately to the Government directives on COVID-19 in order to contain infections and prevent transmission of the disease. The project will play its part to safeguard the health of workers and communities and their respective families from any chain of transmission by making required budgetary allocation to implement the following:

- Poster/signage on COVID-19 protocols at entrances;
- Provision of COVID-19 protocols observance items such as infrared thermometers, nose masks supplies and “no-mask” no entry policy;
- Dust bins; and
- Designated security personnel responsible for COVID-19 protocol.

The availability of the required equipment and logistics, and investment in COVID-19 prevention measures as well as awareness campaign on the dangers of the disease will require workers to:

- Cover mouth and nose when coughing or sneezing;
- Stay at home if sick and report; and
- Avoid crowds and contact with others if sick.

7.11 E&S Capacity Building and System Requirements

The situational analysis of the E&S safeguards capacities, policies and systems of ECG and NEDCo and those of other energy sector institutions as well as MMDAs, with the view to addressing the identified E&S safeguards gaps to facilitate effective implementation of the ESMF, among others is presented in Chapter 8 of the report.

One common mitigation measure that runs through all the sector institutions and the MMDAs is the clear need for capacity building and training tours to help fill in the identified E&S safeguards capacity gaps. The potential capture of the capacity building opportunities, especially training tours by highly placed senior management personnel rather than the deserving E&S technical officers was, however, identified as a consequent residual impact.

The remedial measure provided to prevent such elite capture is to clearly identify and determine specific training tour beneficiaries, in terms of departments and positions, intended purpose as well as the expected corresponding deliverables after the training. All institutions will be required to prepare their training programs and submit to MoEn at the early stage of commencement of implementation of the ESMF.

8.0 E&S CAPACITY BUILDING AND SYSTEM REQUIREMENTS

The situational analysis of institutional E&S safeguards capacity, policy and systems conducted for ECG, NEDCo, MoEn, PURC, EC, NPA, GSMA and TaMA was for the purpose of building requisite E&S capacities and to facilitate the establishment of functional E&S systems, not only for the effective implementation of this ESMF, but also to enhance E&S performance generally as a standard institutional best practice.

8.1 Existing E&S Safeguards Capacity, Policy and Systems

8.1.1 Electricity Company of Ghana

ECG has E&S policy and systems in place in the form of an ESMS. This is, however, described as non-specific, based on the E&S Performance Standards of the IFC rather than the World Bank's requirements for ESMF. The policies and frameworks that guide E&S assessments are not readily available or accessible on the websites. One must write formally to request for them, with no timeline prescribed for the release of the documents.

The Safety, Health and Environment (SHE) Division has responsibility for assessing and managing E&S risks and impacts. The officers within the Division have the capacity and experience to prepare Terms of Reference (ToR) regarding E&S safeguards instruments and projects and provide guidance and supervision to consultants.

The Division has eight (8No.) personnel, which includes the General Manager, two (2No.) Managers and five (5No.) E&S Officers. There are also twelve (12No.) Regional SHE Officers who work directly under the Regional Engineers. These Regional SHE Officers have functional relationship with the SHE Division. The staffing position of the Division is, however, inadequate. There is also limited capacity of ECG's Technical Officers at the regional and district levels on E&S safeguards, and to take up responsibilities for E&S management commitment, and availability for safeguards implementation and compliance.

ECG has SEP to facilitate the involvement of stakeholders. It is an integral part of the Environmental and Social Management System (ESMS) for ECG. This enables impacted parties and vulnerable groups to be consulted using focus group discussion to capture concerns and to reflect these in the appropriate EA reports. The engagement mechanisms facilitate social inclusion - a key pillar for improved service delivery through outreach to the most vulnerable.

ECG has a Grievance Redress Mechanism (GRM) in place, as prescribed by ESS 10. The GRM provides all persons and groups affected by the company's projects and activities, avenues through which they can express their concerns and receive the needed corrective action in an appropriate and timely manner. ECG receives different types of complaints from its customers through the GRM. Some of these complaints include complaints relating to power surges,

complaints relating to prolonged power outages/ delayed replacement of removed meter, billing complaints and complaints related to sexual abuse and harassment, gender-based violence, sexual exploitation. These complaints are received through various channels of the GRM, such as the call centers or the walk-in helpdesks at all the regional and district offices across the country, the ECG community complaints boxes or the ECG website at help@ecggh.com. Complainants can also lodge their complaints at ACEP, through their Electricity Monitor online platform at <https://electricitymonitorgh.com/>, or PURC through the email address at <https://www.purc.com.gh/#complaint>. ECG also has active social media pages for engaging stakeholders and customers.

There are different procedures for handling complaints, depending on channel of receipt, their type and urgency of the complaint. However, all complaints are documented, complainants are notified of the receipt of the complaint, complaints are screened for admissibility, and action taken to address the issue complained about. A response is then formulated and communicated to the complainant about the action taken. The complaint is then closed, if the complainant is satisfied with the action taken. All these are done within 20 working days, upon receipt of the complaint. However, due to the sensitivities with handling GBV/SEA/SH cases brought against staff of ECG, there is a different process in place for referral of such cases. The full GRM procedure in place at ECG is explained in detail in appendix 13.

The company operates a gender and social inclusion policy (GSIP - 2020) with the objective to improve organizational culture and operational performance to advance gender equality, diversity, and social inclusion. GSIP commits to zero tolerance of sexual harassment in the workplace, more gender equitable recruitment and hiring practices, and maternity and paternity leave. The development of ECG's Gender Action Plan resulted in the establishment of a Gender Unit to implement the newly designed policy and plan. The GSIP commits to a workforce of 40% female by 2035. However, the current proportion of female workers stands at 24.4%.

The ESMS has a related Health and Safety (H&S) Manual prescribing measures to protect workers' health and safety. In addition to the H&S Manual, there is ECG Operations Manual which guides all technical staff on safe operations of the ECG network.

ECG projects/activities are subjected to E&S screening and environmental permit obtained for them. For instance, in 2020, three (3No.) substation projects were subjected to EA processes and environmental permits were secured for all three projects; while in 2021, of the six (6No.) substation projects subjected to EA and three permits were obtained, while the remaining applications are ongoing to secure permits for them.

8.1.2 Northern Electricity Distribution Company

The company has no documented E&S safeguards system and procedures for resettlement (compensation) issues such as an ESMF or RPF. NEDCo relies on VRA's E&S policies. There is currently one designated officer for E&S roles. However, the Engineering Services Department assumes responsibility for E&S issues when the need arises. This is usually when new sites are being acquired for substation construction. With regards to power (distribution) lines construction, in as much as possible, NEDCo relies on the utility RoW available, in most

cases. There is also no E&S safeguards capacity at the various levels of NEDCo's operational areas (regional, district, etc.).

NEDCo has no SEP to facilitate the involvement of stakeholders in project decisions and neither any experience in stakeholder mapping, and engagement methodology and execution. Thus, no project impacted parties and vulnerable stakeholders such as marginalized/life-line customers are identified for any sector social benefits or support.

The company does not have a complaint redress system or GRM, no gender and social inclusion principles and is not committed to gender equality policy. NEDCo's HR Policy document has a section that mentions sexual harassment for both male and female at the workplace, however, there is no specific policy document on sexual harassment and genderbased violence.

8.1.3 Ministry of Energy

The Ministry has a draft Health, Safety, Security and Environment Policy as part of the larger Draft Energy Policy which will be presented to Cabinet in 2022. The Ministry also developed an HSE Manual that provides guidelines for the development of:

- Standard Operating Procedures;
- HSE Records retention standards;
- HSE Management system; and
- Incident notification and investigation.

The HSSE Manual is supposed to show the government's direction in terms of HSE in the energy sector. The HSSE Unit is responsible for all E&S issues and are staffed with 2 personnel with MSc Environment, Health and Safety, and BSc Environmental Science degrees.. The HSSE Unit also coordinates with the technical directorates on HSE issues, especially on climate change issues. The MoEn has a Project Implemented Unit (PIU) that works independently from the HSSE Unit, but could provide needed support to the HSSE Unit to strengthen its representation of the Ministry more effectively, and also coordinate with the sector technical directorates on HSE issues.

8.1.4 Public Utilities Regulatory Commission

PURC's E&S policy and system is encapsulated in the Social Performance Indicators. The Energy Service and Performance Monitoring (ESPM) Directorate, consisting of a director, two senior managers, one manager, and an assistant regulatory engineer is responsible for all E&S issues.

PURC's Stakeholder Engagement Plan requires that affected communities and vulnerable groups are consulted during an EA process. Stakeholder mapping helps to focus on specific concerns of the vulnerable and the challenges they face in accessing benefits and when applicable, the available or required subsidies. The Commission has developed a means to identify lifeline customers who are likely to be affected by tariff increases for support.

There is consistent regulatory compliance monitoring system in place. PURC has personnel with sufficient capacity to monitor ECG's stakeholder engagement mechanisms to facilitate

social inclusion. However, the current stakeholder engagement mechanisms lack the capacity to measure customer satisfaction. The EA system and service delivery integrate universal design principles to facilitate access to all its customers. It has disaggregated data on its customers, which includes data on vulnerable groups such as women, physically challenged, and senior citizens. An example is the use of focus group discussion to capture concerns and reflect them in EA documents.

8.1.5 Energy Commission

The Energy Commission, as a regulatory body, ensures that all related sector projects undergo E&S screening, and an environmental permit should be obtained from the EPA before the EC license can be granted to the project proponent. The Social, Environmental Impact Technology Assessment (SEITA) Unit has the responsibility of handling E&S safeguards issues. The unit consists of four personnel at post at their head office.

The EC has SEP, especially for clean cooking stove manufacturing improvement, that helps in facilitating stakeholder involvement in project decisions. The Human Resource (HR) Manager of the EC usually sets up a grievance redress committee to deal with complaints received by the office of the HR.

8.1.6 National Petroleum Authority

The Licensing regime of NPA requires the submission of EPA permit for about 90% of petroleum downstream installations and facilities such as refineries, storage depots, among others. The NPA has a Health, Safety, Security and Environment (HSSE) Unit in place. It is responsible for E&S safeguards issues and supervision in the petroleum downstream industry. There are currently 10 officers, 1 Unit Head and 1 Director making a total of 12 personnel in the Unit. However, it is not fully functional to facilitate sector project EA processes for decision making and requires training and capacity building. The existing E&S personnel at the various levels of NPA's operation include:

- Management Level - 2 Personnel
- Supervisor/ Officer
 - Greater Accra - 5 Personnel
 - Western Region - 2 Personnel
 - Ashanti Region - 2 Personnel
 - Volta Region - 1 Personnel.

The NPA has SEP to facilitate the involvement of stakeholders in project decisions such as clean cooking stove manufacturing improvement, LPG market demand promotion, etc. Currently, the NPA is undertaking the Piloting of the Cylinder Recirculation Model (CRM) project which will subsequently be rolled out nationwide. The methods used for engaging relevant and vulnerable stakeholders include: door to door; regional stakeholder engagements; and constitution of committees (including all relevant stakeholders).

The NPA has a documented harassment policy for its staff that spells out the Grievance Redress Mechanism (GRM). The various means of redressing complains of stakeholders include: online complains form; toll free number; customer lines; dedicated email address; and submission of concerns through writing to the Chief Executive.

8.1.7 Metropolitan, Municipal District Assemblies

The two MMDAs involved in the situational analysis were the Tamale Metropolitan Assembly for NEDCo's operational area and the Ga South Municipal Assembly in the ECG's operational area.

Tamale Metropolitan Assembly

The Assembly's role in the power sector includes:

- Conducting power needs assessment and incorporating the gaps in its plans; •
- Procuring electrical poles (and other accessories, where necessary); and
- Liaising with NEDCO to extend electricity to relevant communities.

The Statutory Planning Committee (SPC) of TaMA comprising representatives from EPA, EHO, Stool Lands, GNFS, Building Inspectorate Division and traditional authorities screens EA applications for permits and advises management on development controls. The Metropolitan Physical Planning Officer (MPPPO) is Secretary to the committee and chaired by the MCE.

The assembly does not have a designated unit/department responsible for E&S safeguards issues. The Department of Social Welfare and Community Development (SWCD) takes up responsibility for E&S safeguards functions. The SWCD has 6 personnel.

The Assembly does not have a documented E&S safeguards policy or system in place to guide its planning and development decision processes but relies principally on the EPA. The Department of SWCD inadvertently assumes some of the E&S safeguards functions. No functional Stakeholder Engagement Plan to facilitate the involvement of all relevant stakeholders in its plan preparations and zoning decisions is in place. There is also no GRM to address sexual harassment and gender-based violence issues.

Ga South Municipal Assembly

The Assembly's role in the power distribution sector includes:

- Procuring low tension poles for communities without power;
- Liaising with ECG to connect the communities to the national grid; and
- Contacting and making records of the owners of land affected and writing to ECG for fair compensation payment.

The Municipal SPC screens applications for environmental assessment and permits and also provides advice on development controls. The Municipal Physical Planning Officer (PPO) is Secretary to the committee, and which is chaired by the MCE.

The Works Department (WD) and Development Planning Unit (DPU) are responsible for the E&S safeguards roles of the Assembly, but have weak E&S safeguards capacities. The staff strength of 15 (for Works) and 4 (for Development Planning) is adequate for their normal roles. The Assembly relies and collaborates with EPA on EA applications by proponents.

The Assembly does not have a documented E&S safeguards system as guiding framework for its planning and development decision processes as well as for stakeholder engagement activities. The Assembly has no experience in subjecting its projects/programs/plans to E&S screening for the required environmental permit from the EPA.

8.2 E&S Capacity Building and Functional System Needs

A common mitigation measure running through all the sector institutions and MMDAs is the clear need for capacity building to fill the identified E&S safeguards capacity gaps. A related remedial action to prevent potential capture of the capacity building opportunities, especially training tours where influentially placed senior personnel to the detriment of the respective institutions is therefore provided. To prevent such elite capture, training programs by each institution will be drawn up at the beginning of the project implementation and lodged with MoEn. This will clearly identify and determine specific training tour beneficiaries, in terms of departments and positions, intended purpose to serve as well as the expected corresponding deliverables after the training.

8.2.1 Electricity Company of Ghana

There is limited capacity of ECG's Technical Officers at the regional and district levels on E&S safeguards, and to take up responsibilities for E&S management commitment, and availability for safeguards implementation and compliance.

Though ECG has an E&S policy and systems in place (in the form of an ESMF), the framework supposed to guide E&S assessments are not readily available or accessible on the websites. There could be challenges with publicity, general awareness, and broad-based involvement of technical staff in E&S safeguards application, arising from lack of integration of E&S safeguards issues into all relevant areas of ECG's operation. ECG's GRM is also not timebound - complaints reporting framework does not state the length of time it will take to resolve/address any specific complaint and also when this could be escalated to the next level.

The E&S Officers should benefit from fresher E&S safeguards courses at the EPA-IES and provided the opportunity to attend the International Association for Impact Assessment (IAIA) Annual Conference and pre-conference training courses to boost confidence, establish required professional networks and facilitate effective implementation of this ESMF.

The Technical Officers at the regional and district levels responsible for E&S safeguards issues should be trained by the E&S Officers, and also undertake custom-made E&S safeguards courses at the EPA-IES. A special high-level sensitization program on E&S safeguards should also be organized for top-level management of ECG to elicit required commitment and support to the ESMF implementation.

8.2.2 Northern Electricity Distribution Company

NEDCo needs assistance to develop an in-house E&S safeguards policy and system, as well as E&S safeguards capacity to handle relevant E&S assessment and management issues. A Unit

for E&S safeguards responsibility must be created with personnel of the requisite capacity to assume full responsibility and accountability for E&S issues.

The E&S safeguards capacities at various operational areas (regional, district, etc.) must also be built for effective representation and implementation of the ESMF. The capacity building will encompass and enable the development of appropriate SEP for NEDCo, which will for instance, ensure effective stakeholder mapping to focus on specific concerns of the vulnerable, challenges they face in accessing benefit or required subsidies. Also, to ensure disaggregation of data on beneficiaries (women, differently abled, below poverty line, and minorities) is periodically tracked with respect to access to services.

A joint E&S screening tools development for NEDCo and ECG to operate a common ESMF would be beneficial as this will help synchronise activities within the power distribution industry. The ESMF will provide for the development of the following:

- GRM in place for handling grievances;
- Gender and social inclusion principles and commit to gender equality – accounting progressively for equal proportion of female workforce to male; and
- Sexual harassment and gender-based violence policy in the workplace.

An E&S Safeguards Specialist and a Social Development Specialist should be hired to man an Environment and Social, Health and Safety (ESHS) Unit of NEDCo. As part of their responsibility the Specialists would train other two recruited E&S officers to form a formidable ESHS team at the Head Office. The recruited E&S officers would also receive custom-made training at the EPA-IES as well as opportunity to attend the IAIA Annual Conferences and preconference training courses.

Similar ESHS Units would also be established in all Regional Offices of NEDCo and manned by an officer each. These officers will also go through similar training programs to build their capacity to represent the company and perform all E&S safeguards tasks, reporting and liaising effectively with the Head Office ESHS Unit. A special high-level sensitization program on E&S safeguards should also be organized for top-level management of NEDCo to elicit required commitment and support to the ESMF implementation.

8.2.3 Ministry of Energy

The MoEn's PCU (with expertise in E&S safeguards) should provide support to the HSSE Unit for the Unit to strengthen its representation of the Ministry and for its coordination function with the sector technical directorates on HSE issues, including climate change issues. The PCU should partner with the HSSE Unit to promote institutionalisation of information disclosure to ensure that, beneficiary agencies publicly disclose their E&S policies and this ESMF. They should go further to also ensure that program related E&S documents are publicly disclosed, as well as support the planning, management, and reporting on E&S performance towards contributing to achieving this ESMF project goals.

Special allocated investment should be provided to fund the EPA-IES for dedicated training/ refresher program to fully prepare the E&S Specialists (at the PCU and HSSE) for the above

roles. To ensure effectiveness of the program, the EPA-IES could partnership with private consulting firms offering services in EA for the benefit of practical experience in the application of tools in all areas of EA as well as field work and stakeholder engagement planning and exercises. The investment could also cover attendance at the IAIA annual conferences and pre-conference training courses.

The joint team could support the building of capacity of staff of sector agencies. The team could run a dedicated budget for monitoring and supervision. A special high-level sensitization program on E&S safeguards should be organized for top-level management at MoEn to elicit required commitment and support to this ESMF implementation and other E&S safeguards areas.

8.2.4 Public Utilities Regulatory Commission

PURC needs assistance to magnify the capacity of the in-house ESPM Directorate in order to enhance its role in supporting or supervising E&S safeguards/assessment functions that are required of the energy sector.

The personnel at the ESPM Directorate will need to be strengthened to sufficiently implement the E&S safeguards requirement of the World Bank ESF (ESSs) and the National EA Regulations. To achieve this, the staff of the directorate should receive custom-made training at the EPA-IES as well as the opportunity to attend the IAIA annual conference and preconference training courses.

8.3.5 Energy Commission

The Commission needs assistance to develop an in-house E&S safeguards policy and system to perform its E&S functions, and related decisions. It will also enable EC to conduct impact assessment studies and environmental compliance monitoring exercises of the various utilities as well as facilitate and participate in the review of sector-related project impact assessments by proponents, in collaboration with EPA.

The SEITA unit (of four personnel) should be sufficiently equipped to facilitate implementation of and compliance with the E&S safeguard requirement of the World Bank ESF (ESSs) and national EA Regulations with respect to sector projects by proponents. Environmental management training for the energy industry and study tours at other regulatory institutions for learning and sharing should be provided to the SEITA unit personnel. Attendance of the SEITA Unit personnel (4) to the Annual Conferences and pre-conference training courses of IAIA to boost confidence in E&S safeguards and related courses is very essential to the implementation of the E&S safeguards. Also, providing custom-made training at the EPA-IES will further boost the capacity of the SEITA Unit.

The trained personnel would serve as trainers, providing E&S safeguards training to the various operational areas (especially regional offices). This could lead to the establishment of regional E&S safeguards units with recruited officers. The trained personnel could assume the responsibility to build sufficient capacities of the recruited officers for effective representation of EC in the regions. The regional E&S safeguards units would be able to undertake joint

monitoring of energy sector projects with EPA, as well as share any E&S safeguards intelligence in the mutual interest of the two institutions.

A special high-level sensitization program on E&S safeguards should also be organized for top-level management of EC to elicit required commitment and support to E&S safeguards programs.

8.3.6 National Petroleum Authority

NPA needs in-house E&S safeguards capacity building and training to handle relevant E&S assessment and management issues. The HSSE Unit for E&S safeguards responsibilities will be heightened with requisite capacity for personnel to assume full responsibilities and accountability for E&S issues.

HSSE Units could also be created at the regional offices. The recruited E&S officers to station in the regional offices would also receive custom-made training at the EPA-IES as well as have the opportunity to attend the IAIA annual conferences and pre-conference training courses. The E&S officers at the various levels of NPA's operations will report and liaise effectively with the Head Office HSSE Unit. A special high-level sensitization program on E&S safeguards should also be organized for top-level management of NPA to elicit required commitment and support to E&S safeguards programs.

8.3.7 Metropolitan, Municipal and District Assemblies

The beneficiary MMDAs need E&S safeguards capacity building to empower the relevant officers and the Assembly generally. Custom-made training program on E&S safeguards requirements of the World Bank and the national EA Regulations, among others should be organized and delivered. The training program should cover the Social Welfare and Community Development Dept, the Physical Planning, and Public Relations and Complaints Committee (PRCC), and generally the SPC representatives.

A unit for E&S safeguards issues should be created and staffed with recruited E&S personnel of sufficient capacity to manage and take up responsibility for E&S safeguards issues. The officer should also benefit from the EPA-IES training to enhance required capacity. Through this, the Assembly would be empowered to develop a functional SEP to facilitate the involvement of stakeholders in its Plans preparation and zoning decisions, and setting up of appropriate GRM, and sexual harassment and gender-based violence policy.

9.0 ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

It is important that the mitigation measures outlined in Chapter 7 are adequately implemented to prevent the occurrence of the identified negative impacts of the project or to minimize their effect if they do occur. However, the effective implementation of these mitigation measures will, to a large extent, be dependent on the development of a complementary Environmental and Social Management Plan (ESMP). An ESMP has been developed in this ESMF in accordance with the EA Regulations and the World Bank ESF. The ESMP presents the implementation schedule of the proposed mitigation measures to both environmental and social impacts as well as plans for long-term monitoring activities. The ESMP also includes the associated E&S budgets needed to implement the recommended mitigation measures.

The following management plans (in tabular format) have been defined to address the evaluated impacts (Tables 9.1 to 9.10 below):

- 1) Occupational health and safety plan;
- 2) Community health and safety plan;
- 3) Waste handling and management plan;
- 4) SEA/SH and gender-based violence prevention plan; 5) Labour management plan.

Table 9.1 Occupational Health and Safety (OHS) Plan

Management Area	Sources of Risks/ Impact	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
General	- Falling poles during works - Vehicle knockdown of workers - Falling objects from height during works - Falling during meter installation/replacement - Electrocution meter installation/replacement	- Conduct physical checks/screening of poles before climbing - Ensure regular maintenance of vehicles - Provide covered toolboxes for use - Provide and ensure the use of helmets on the field - provide and ensure that all works at height are done in accordance with a fall protection regime - Enforce minimum distances for persons during stringing of poles	- Before works commence - At all times - At all times - At all times - Before works commence - Before works commence	Safety, Health, and Environment (SHE) Division of ECG Environment and Social Health and Safety (ESHS) Unit of NEDCO
Energized Service Cables and Meter Parts	- Poor due diligence checks on workers - Poor checks on lines being deactivated - Poor adherence to safety and insulation standards - Poorly trained workers - No clearly defined Health and Safety Plan - Lack of adherence to guidelines on minimum approach distances	- Conduct training and certification of workers for installation, repair or maintenance works - Prohibit untrained workers from such activities - Establish/Implement Standard Operating Procedures (SOPs) for live-line works - Develop a Health and Safety Plan - Ensure adherence to local legislation, standards, and guidelines relating to minimum approach distances	- Quarterly - Impromptu checks - Before works commence - Before works commence - Impromptu checks	Safety, Health, and Environment (SHE) Division of ECG ESHS Unit of NEDCO
Management Area	Sources of Risks/ Impact	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility

Working at Height	- Failure to conduct structural integrity tests - Failure to implement a fall protection program - Failure to implement a fall protection system - Lack of a workpositioning device system for workers - Poorly trained hoist operators - Poor removal of obstructions on poles - Use of worn-out rope safety belts and backup safety strap - Use of unapproved tool bags	- Test structures for integrity prior to undertaking work - Design and implement a fall protection program - Build a system around the fall protection program - Ensure workers are secured with a work-positioning device system - Provide adequate training for hoist operators - Use properly rated hoisting equipment - Eliminate all obstructions on poles - Rope safety belts will be replaced periodically - Enforce the use of approved tool bags for raising or lowering tools	Before works commence	Safety, Health, and Environment (SHE) Division of ECG Environment and Social Health and Safety (ESHS) Unit of NEDCO
Exposure to Toxic substances in electrical and electronic waste	- Handling, packaging, and transportation of damaged meters to temporal storage site - Storage of damaged meters	- Develop e-waste management plan - Train workers on handling of ewaste - Check compliance to e-waste management plan	- Before works commence - Before works commence - Quarterly	SHE Division of ECG/ ESHS Unit of NEDCo
Electrical Fires and its Impacts	- Incorrect wiring - substandard wiring and metering materials	- Recruit certified meter installing technicians. - Ensure adequate training on appropriate wiring for meter installers. - Ensure strict compliance to meter wiring standards. - Ensure meter and accessories meet industry best standards.	- Before works commence - Before works commence - Intermittently - During procurement	ECG/NEDCo Procurement Directorate SHE Division of ECG ESHS Unit of NEDCo ECG/NEDCo works supervisors

Table 9.2 Community Health and Safety Plan

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
Electrocution	- Direct contact with live wires in meters - Direct or indirect contact with energized conducting items because of short circuiting	- Ensure all live parts of meters are covered - Organise public sensitisation / education on electrocution hazards on meters - Ensure all wiring meet industry best standards	- Throughout project works - Before works commence - Throughout project works	(SHE Division of ECG ESHS Unit of NEDCo Works Supervisors
Electrical Fires	- Incorrect wiring practices - substandard materials	- Train technicians on proper wiring of meters - Ensure all wiring meets industry best standards - Ensure meter procured meets industry requirements	- Before works commence - During works	SHE Division of ECG/ ESHS Unit of NEDCo Works Supervisors

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
			During procurement of meters	ECG/NEDCo Procurement Directorate

Table 9.3 Waste Handling and Management Plan

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
Waste Electrical and Electronic Equipment (WEEE)	- Improper handling and disposal of obsolete circuit boards (containing Pb, Cd, brominated fire retardants) - Improper disposal of hazardous waste from cleaning of electrical substations and urban manhole facilities - Waste from poorly serviced insulating materials - Pollution of soil, water and air media from activities of informal e-waste recyclers - Lack of a laid down procedure for disposing of e-wastes in power distribution sector.	- Institute an accounting procedure for all WEEE - Auction discarded EEE from old or damaged transformers and meters. - Provide lined plastic sheets and chippings underneath all polemounted transformers. - Provide a restricted/controlled storage area for all WEEE including insulating materials. - Tighten the control system for WEEE to eliminate potential releases to informal e-waste recyclers. - Develop an industry-wide procedure for disposing of EWastes from the power distribution sector - Provision of bins for waste collection/segregation.	- Before works commence - Biannually - During works 6 months after completion of works - During works on restricted WEEE storage area 3 months after completion of works - Weekly inspection of bins and usage	SHE Division of ECG
Other Wastes	- Indiscriminate disposal of solid waste in the project communities - Burning of waste - Workers engaging in open defecation in project communities	- Provision of mobile toilets at designated locations. - Awareness raising on the health risks associated with open defecation	- Daily inspection of toilets - Quarterly inspection of records of awareness campaign	

Table 9.5 SEA/SH and Gender Based Violence Prevention Plan

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility

SEA/SH and GBV risk	- Inadequate sensitization and information sharing among community members about the project - Sexual harassment by contractor workers - Marginalization of women and other vulnerable groups in employment during project implementation	- Provision of adequate information about the project, to prevent women from being unduly taken advantage of. - ECG should ensure that contractors that are selected to implement the metering will develop Contractors Environmental and Social Management Plan (C-ESMP) which will contain a GBV/SEA/SH prevention plan, based on the disclosed ESMF. These requirements should be included in the contract documents - Establishing functional GRMs, with adequate provision for referral and handling of SEA/ SH cases, such as a	- Community engagement and information sharing should be done before work commences - GRMs established before project activities begin, and maintained throughout the	SHE Division of ECG ESHS Unit of NEDCo
Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
	- Women being sidetracked from compensation and decision-making process Women especially those who are migrant and fiduciary title holders risk being harassed in exchange for decent compensation - Sexual harassment by ECG/NEDCo/ contractors staff during the meter installation/ replacement works	GBV service provider, given that the general GRM may not be appropriate for reporting or handling the sensitivities associated with SEA/SH cases. - Development of a quota system to employ female applicants - Intensive education of all locals to allow females to avail themselves for construction activities as well as unskilled labour during operations. - Provision of adequate information to women to ensure fair compensation is given to them - Ensure that existing GRM mechanisms in the compensation and resettlement processes provide for anonymous and transparent reporting for women and minority groups - Women participation in consultations and suitable timing for the engagement sessions will be established - ECG will enforce its GSIP while NEDCo will develop an SEA/SH policy	project life cycle	

Table 9.6 Labour Management Plan

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
Labour Related Issues	- Discrimination against PWD's - Lack of separate sanitary facilities for men, women and other vulnerable groups - Incidence of force labour and compulsory overtime - Risk of accidents to community volunteers	- Implementation of a gender equality mechanisms - Improved and separate sanitary facilities for men, women and vulnerable persons - Prohibition of force labour - Payment of fair, realistic and adequate compensation packages especially to local staff - Prohibition of excessive compulsory overtime duties. - Provision of safe working environment	- Before work commence - Throughout the project life cycle	SHE Division of ECG ESHS Unit of NEDCo

The detailed Labour Management Plan is captured in Appendix 19.

Table 9.4 Elite Capture of Training Tour Prevention, and Meter Distribution Plan

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
Exploitation of training tours by influentially placed senior	Diversion of capacity building/training tour opportunities earmarked for E&S technical officers.	Institutions to draw up respective training programs at the beginning of project implementation.	At commencement of the ESMF implementation (Training program preparation as the	- Chief Director of MoEn - Director of Finance and

Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
personnel in the institutions	- Denial of training opportunities to fill identified E&S safeguards capacity gaps in the institutions - Inability to build required E&S safeguards capacity and systems within the institutions. - Institutions will remain handicapped, unable to discharge their E&S safeguards mandates and roles.	- Training programs to identify and determine specific training tour beneficiaries (including departments and positions, and intended purpose) - Training programs to define expected deliverables after the training and monitoring milestones. - Institutional training programs to be lodged with MoE for implementation when due.	- first activity by each institution). - Lodging of Training program with MoE before end of first Quarter of ESMF implementation. - Report of training, E&S deliverables, and monitoring milestones on quarterly basis	Administration ECG

• Elite capture and exclusion of vulnerable groups from distribution of meters	• Political favouritism: Local politicians or other powerful elites may improperly influence which areas or households get priority installation, to benefit their constituents over needier communities. • - Bureaucratic corruption: Project officials may accept bribes to expedite installation in wealthier areas, or delay/deny access for those who cannot afford to bribe them. Reporting of installations may be inaccurate. • Social imbalances - Meters end up concentrated in installation targets easier to reach, such as wealthier neighbourhoods vs. remote poor communities. • Weak monitoring/enforcement: Without oversight, officials have incentive	• Transparent allocation process, to clearly define eligibility criteria for meter installation based on need, not social status. Publicly communicate the process for allocating meters to create accountability. • Prioritize underserved areas: Intentionally target installation in low-income communities and rural areas that have historically lacked access, not just wealthier areas. • Community involvement: Engage local leaders and community groups in the planning and implementation process. This helps ensure the needs of vulnerable populations are represented. • Monitor distribution: Track where meters are installed and which households benefit. Address any imbalances or discrepancies in access between high and low socioeconomic groups. • Grievance redressal: Establish a transparent complaint mechanism for communities to report issues like corruption or	• Design/ integrate transparency in meter allocation procedures before project implementation, and maintain throughout project life. • Community awareness raising on allocation procedures should be done before project begins.	SHE Division of ECG ESHS Unit of NEDCo
Management Area	Sources of Impact / Risks	Mitigation/Monitoring Actions & Requirements	Implementation & Reporting Schedule	Responsibility
	to cut corners or prioritize connections for personal gain rather than equity. Targets may not be properly tracked. • Lack of recourse: No effective grievance redressal means issues of favoritism/exclusion cannot be properly reported or addressed when they occur.	lack of access. Investigate and remedy problems promptly. • Awareness raising: Widely communicate in local languages about the project, eligibility, and process. This empowers communities to hold authorities accountable.		

10.0 ESMF IMPLEMENTATION PLAN

The section provides the plan for implementation of the ESMF as well as facilitating the ease of implementation. It therefore defines the respective roles expected of the project implementers and those of the other key stakeholders. The key areas of the ESMF implementation plan include:

- Institutional roles and responsibilities;
- E&S screening and assessment procedure;
- Information dissemination and disclosure measures;
- Environmental and social monitoring and reporting; and
- ESMF implementation budget

10.1 Institutional Roles and Responsibility

The successful implementation of the ESMF will depend largely on compliance by key stakeholders. This will ensure that the project components are undertaken with due regard to environmental and social safeguards against potential impacts and risks.

The relevant stakeholders that will play various roles for the ESMF implementation generally and during the project activity implementation activities have been identified, and these include:

- Ministry of Energy;
- Electricity Company of Ghana;
- Environmental Protection Agency;
- MMDAs;
- Traditional Authorities of relevant communities; and
- Third-party contractors.

10.1.1 Role of Ministry of Energy

The MoEn will have a coordinating role with ECG to supervise project implementation, monitoring, etc to ensure activities are conducted in accordance with the ESMF, the environmental permit conditions and other laid down regulations and technical specifications.

10.1.2 Role of ECG

ECG will supervise and monitor installation activities, use of PPEs, etc. by the contractors, and to ensure implementation activities are conducted in accordance with laid down regulations and technical specifications, and in compliance with the ESMF. Upon completion of construction/installation and during power distribution, ECG will supervise subsequent management and maintenance activities.

10.1.3 Role of Environmental Protection Agency

The EPA is the lead environmental regulator. The Agency has the mandate to ensure compliance with the EA Regulations. The Agency will grant environmental permits for the ESMF implementation and ensure compliance with the environmental permit conditions. The Agency will also grant environmental permits for the project components/sub-projects with

approved conditions. EPA's roles in the implementation of the ESMF will include the following (besides EA registration for the project):

- Review and grant Environmental Permit for the ESMF (with a schedule of permit conditions);
- Delegate Regional Offices to handle project components/sub-projects EA registration;
- Review and acceptance of ToRs for the project components requiring ESIA;
- Grant Environmental Permit for sub-projects;
- Monitor Environmental Permit conditions and other E&S safeguards compliance; and
- Receive and review completion report.

10.1.4 Role of MMDAs

Project implementation will involve liaising with the local people in the communities. Extension of power to communities is often a priority consideration in the development programme of Assemblies, and communities are often in eager expectation for assistance from the Assemblies to be connected to electricity. The Assemblies' roles will include:

- Participation and support in the project activity E&S assessment preparation;
- Preparation of local plan guide or LV distribution plan for communities (in consultation with ECG for the siting of poles);
- Collaboration with contractors in project implementation.

10.1.5 Role of Chiefs/Traditional Authorities of catchment

communities

The role of Chiefs in the communities will include:

- Mediating in case of conflicts between the communities and workers; and
- Use their convening powers to mobilize their communities to ensure ease of engagements, information sharing etc.

10.1.6 Role of Third-Party Contractors

The role of contractors will include the following:

- Develop a work schedule and standard operational procedures (SOPs) based on the E&S safeguards (provided as mitigation measures);
- Submit the plan of work/schedule and SOPs to ECG for approval;
- Registration of project components for approval from EPA;
- Create awareness and training for all personnel and workers under the contractors' jurisdiction on E&S safeguards measures (Appendix 20);
- Monitor environmental, health and safety safeguards;
- Manage appropriately all wastes generated;
- Submit monitoring report for each sub-project (as directed by EPA) to ECG; and
- Submit implementation report at completion of project components.

10.2 E&S Screening and Assessment Procedure

This section outlines the screening, review and approval process to facilitate screening of the project activities/components applying relevant guidelines for addressing potential impacts/risk, while meeting World Bank ESSs and the Ghana EA requirements. To facilitate project components assessment processes, a project-specific Screening Checklist (Appendix 9) has been developed to serves the purpose.

All components under this project have been screened to determine the level of assessment required. The screening covered project activities with potential adverse environmental and social impacts and risks and those requiring resettlement/compensation.

Project activities that could pose some level of environmental, social and health risk were screened and placed at the appropriate levels of E&S assessment including:

- Initial assessment;
- Preliminary environmental and social assessment (PEA); and
- Environmental and social impact assessment (ESIA).

The procedure for conducting E&S Assessment is captured in Appendix 10.

10.3 Information Dissemination and Disclosure Measures

The WBG ESSs and the Ghana EA Regulations recognize the importance of open and transparent engagement with project stakeholders as an essential element of good practice. Stakeholder engagement is described by the ESS10 as an inclusive process conducted throughout the project life cycle. When properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks. Stakeholder engagement must be initiated at an early stage of the project development process to be effective as an integral part of project decisions on risks and impacts and planning. Information dissemination and disclosure actions are required at all stages of projects financed by the World Bank. It is to promote effective engagement of all stakeholders including project implementers, regulatory agencies, bureaucrats, project affected persons and project beneficiaries. Effective consultation and information disclosure promote community ownership and participation and help to:

- Establish a systematic approach to identifying and engaging stakeholders to help build and maintain constructive relationships, particularly with project-affected parties;
- Assess the level of stakeholder interests and support to enable their views taken into account in project design and social performance;
- Promote and provide means for effective and inclusive engagement with project affected parties throughout the project life cycle;
- Ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely and appropriate manner and format; and
- Provide project-affected parties with accessible and inclusive means to raise issues and grievances, which will be appropriately responded to and managed.

Information dissemination to stakeholders was carried out using various communication tools including:

- Meetings;
- Posters;
- E-mails;
- Social media (example: WhatsApp);
- Inception Report; and
- Phone communication

After publication/submission of the draft report, a 21-day public notice will be served through newspaper advertisement. This will indicate where copies of the report could be accessed to enable the public provide review input for EPA's attention. The draft report will then be reviewed by EPA, taking into account any input by the public.

The consulted key national, regional and district level institutional stakeholders and the locallevel stakeholders, including nearby communities and NGOs would be invited to a disclosure meeting. The findings of the ESMF will then be presented at the meeting, as well as the methodology used, in order to reach consensus on all the major issues (project's impacts and risks and the corresponding mitigation and safeguard measures). This will also accommodate any outstanding issues. The final report will be distributed for the records of the MMDAs, MoEn, Regional ECG Offices, Regional EPA Offices and the EPA Head Office Library for public information. The document will also be disclosed electronically on EPA's website. During project component implementation, information dissemination and disclosure should include local processes that would ensure that project information is disseminated using local languages, ensuring that the communities are fully aware of developments.

10.4 Environmental and Social Monitoring and Reporting

Monitoring would be a key component of the ESMF during project implementation. Monitoring would be undertaken at the project activity implementation phase to verify the effectiveness of impact management, including the extent to which mitigation measures are successfully implemented. Monitoring cover 2 key areas including:

- Compliance monitoring; and
- Impact monitoring;

The aim of monitoring of the project activities during the implementation phase is to:

- Improve environmental and social management practices;
- Check the efficiency and quality of the EA processes;
- Establish the scientific reliability and credibility of the EA for the project; and
- Provide the opportunity to report the results on safeguards and impacts and proposed mitigation measures implementation.

10.4.1 Compliance Monitoring

This is to verify that the required mitigation measures, which are the environmental and social commitments agreed in the ESMF and project activity EAs are implemented. Compliance

monitoring would include inspections of the management or handling of e-waste to verify the extent to which permit conditions are adhered to. Compliance monitoring will be done by the EPA, though the E&S safeguard officers of implementing agencies will also carry out its limited compliance monitoring on contractors' E&S safeguards obligations.

10.4.2 Impact Monitoring

Monitoring of impacts of project activities and mitigation measures would be the duty of the department/unit responsible for E&S issues at ECG. The E&S safeguard clauses given to the contractor in the contract specifications would be monitored to ensure that works are conducted in accordance with the laid down mitigation measures. ECG would ensure contractors submit reports on work progress and challenges in observing the E&S safeguards. The monitoring results would form a major part of the reports to be submitted to the EPA, MoEn and the World Bank.

10.5 ESMF Implementation Budget

The estimated budget for the ESMF implementation covers the cost of disclosing and implementing the ESMF, E&S assessment of project components and institutional E&S safeguard capacity building (for effective implementation of the ESMF). The estimated budget for undertaking these activities is **GHS 3,979,118.31.**

10.5.1 Estimated Budget for ESMF Disclosure and Implementation

The ESMF will be publicly disclosed and disseminated in-country on MoEn and ECG websites as well as the EPA website with copies to the relevant MMDAs, once it has been cleared by the World Bank. The budget for the disclosure and dissemination workshop and implementation of the ESMF will cover costs of the workshop, and training for MoEn, ECG and NEDCo in order to effectively execute roles as outlined in the ESMF. Table 10.1 presents the estimated budget for disclosure and implementation of the ESMF.

Table 10.1 Estimated Budget for ESMF Disclosure and Implementation

No.	Activity	Description	Rate (GHS)	Estimated Cost (GHS)
1	RPF disclosure workshop	Disclosure workshop for the ESMF organized by ECG and NEDCo involving all relevant institutions (including the World Bank Officials)	30 Participants @ GHS1,841.76 per participant	44,452.80

2	Training Sessions for - MoEn - ECG - NEDCo	Training on ESMF implementation including: - Environmental and social issues - GRM and entitlement etc. - Procurement of E&S Assessment - Screening and registration of projects activities - Facilitating E&S Assessment preparation, etc.	2 Training Sessions @ GHS 29,635.20 each. 1 Refresher Training Session @ 29,635.20	59,270.40
3	E&S implementation M&E by ECG and NEDCo	ECG and NEDCo undertakes implementation of the M&E of ESMF and project activities at the district, regional national levels	2 visits in a year for 4 years @ GHS 74,088.00/year	148,176.00
Total				355,622.40

10.5.2 Estimated Budget for E&S Assessment Preparation

The budget estimates for the preparation of Preliminary Environmental Report (PERs), Environmental and Social Impact Statement (ESIS) cover the total consultancy costs for individual project activities. The budget for E&S assessment preparation for project activities is presented in Table 10.2.

Table 10.2 Estimated Budget for E&S Assessment

No.	Description	Estimated Number	Rate (GHS)	Estimated Cost (GHS)
1	Projects activities requiring PER	2	370,440.00	1,481,760.00
Total				1,481,760.00

10.5.3 Estimated Budget for Institutional E&S Safeguards Capacity Building

The budget estimates for the institutional E&S safeguard capacity building covers the cost of training for ECG, NEDCo, PURC, EC, NPA and MMDAs to perform and assume full responsibilities and accountability for E&S issues. Tables 10.3 give indicative budget estimates for training at the Institute of Environmental Studies and annual and pre-conference training courses at the International Association for Impact Assessment (IAIA).

Table 10.3 Estimated Budget for Institutional E&S Safegaurd Capacity Buiddling

Capacity Building Needed	Institution (Unit/Department)	No. of Personnel	Training Cost (GHS)	Projected Total Cost (GHS)
5-day training on:	NEDCo (ESHS)	7		56,010.53
- World Bank ESSs - National environmental assessment regulations - Review and	ECG (SHE)	15	8,001.50 per person for residential programmes	120,022.56
	Energy Commission (SEITA)	4		32,006.02
	NPA (HSSE)	11		88,016.54

implementation of Stakeholder Engagement Plan	PURC (ESPM)	14		112,021.06
Participation in: • IAIA conference • IAIA pre-conference courses	NEDCo (ESHS)	3	59,270.40 per person covering: • Registration • 2-day training course • Accommodation • Travel expenses • Per diem allowance	177,811.20
	ECG (SHE)	3		177,811.20
	Energy Commission (SEITA)	4		237,081.60
	NPA (HSSE)	2		118,540.80
	PURC (ESPM)	5		296,352.00
2-day regional training on EA Regulations	MMDAs (49)	245 (5 per Assembly)	2,963.52 per person for non-residential programmes	726,062.40
Total				2,141,735.91

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APPENDICES

1.0	EPA Letter Requiring ESMF
2.0	Letters of Introduction from Ministry of Energy
3.0	Engagement Guides / Capacity Needs Assessment Questionnaire
3.1	Ministry of Energy
3.2	Energy Commission
3.3	NPA
3.4	PURC
3.5	NEDCo
3.6	ECG
3.7	EPA – Head Office
3.8	EPA – Institute of Environmental Studies
3.9	EPA – E-Waste Secretariate
	Consultation Guide – MMDAs
4.0	Consultation Guides – Civil Society Organizations
5.0	5.1 E-Waste Management Companies
	Engagement & Capacity Needs Assessment Outcomes
6.0	6.1 Ministry of Energy
6.2	Energy Commission
6.3	NPA
6.4	PURC
6.5	NEDCo
6.6	ECG
6.7	EPA – Head Office
6.8	EPA – Institute of Environmental Studies
7.0	Consultation Outcomes – MMDAs
7.1	Tamale Metropolitan Assembly
7.2	Ga South Municipal Assembly
8.0	Consultation Outcomes – CSOs and Traditional Authorities
8.1	Green Advocacy Ghana
8.2	Africa Centre for Energy Policy
8.3	Traditional Authorities
9.0	Screening Checklist/Criteria for Project Components
10.0	Environmental and Social Assessment Procedure
11.0	Environmental Assessment Forms
11.1	Form EA1
11.2	Form EA2
12.0	Outline for PER / EIS
13.0	Grievance Mechanism
14.0	Sample Grievance and Resolution Form
15.0	Citizens Engagement Plan
16.0	Grievance Register
17.0	Framework for the Census of Affected Assets and People
18.0	Labour Management Plan
19.0	Contractor’s E&S Clauses
20.0	Accredited E-waste Handling/Management Companies in Ghana

Appendix 1.0

EPA Letter Requiring ESMF

Tel: (0302) 664697 / 664698 / 662465
 667524 / 0289673960 / 1 / 2
 Fax: 233 (0302) 662690
 E-mail: info@epa.gov.gh
 Ghana Post (GPS): GA-107-1998



Environmental Protection Agency

P. O. Box MB 326
 Ministries Post Office
 Accra, Ghana
 Website: <http://www.epa.gov.gh>

Our Ref: CE/8063/01/02

March 03, 2022

The General Manager
 Electricity Company of Ghana Limited
 P. O. Box 5278
 Accra-North

Dear Sir,

ENVIRONMENTAL MANAGEMENT FRAMEWORK (EMF):
PROPOSED INVESTMENT PROJECT FINANCING OF THE ENERGY SECTOR
RECOVERY PROGRAM

We acknowledge receipt of your completed Environmental Assessment Registration Form (Form EA2) on the above proposal submitted to the Agency for the purpose of obtaining environmental approval in accordance with the Environmental Assessment Regulations 1999 (LI 1652).

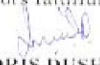
Your project falls under the category of undertakings for which an Environmental Management Framework (EMF) is required to understand the likely implications of the proposal, the relevant alternatives and mitigations to consider in order to ensure, sound decision-making and sustainable development of the project.

You are therefore required to prepare and submit Eight (8) copies of the Environmental Management Framework to the Agency in line with LI 1652 and the Ghana EIA Procedures.

It is important that the Environmental Management Framework contains information on the consultants who prepared the reports. This should include names, address, email, telephone numbers, experience and their specific contribution to the study. Failure to provide this information would render the submission incomplete.

Do not hesitate to contact the EPA Head Office (Room 304/5) or the undersigned on (0501301448) or via E-mail: gaa.dept@epa.gov.gh for any assistance or guidance you may require in this regard.

Yours faithfully,


 DORIS DUSHIE
 PRINCIPAL PROGRAMME OFFICER/EAA UNIT
 FOR: EXECUTIVE DIRECTOR

Appendix 2.0

Letters of Introduction from MoEn



MINISTRY OF ENERGY

P. O. Box SD 40 Stadium, Accra
Digital Address : GA-107-2970

Kindly quote this number and date on all correspondence

My Ref. No. EC/PC/GESTIP/v.2/93

Your Ref. No. _____

Date. 2/03/2022

The Executive Secretary
Energy Commission (EC)
Airport East,
Accra

Dear sir,

DEVELOPMENT OF AN ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR ECG & NEDCO'S ACTIVITIES UNDER PFORR – ACCESS TO RELEVANT INFORMATION

The Ministry has contracted Mr. Yaw Amoyaw-Osei, an Environmental and Social Consultant based in Ghana, under the Ghana Energy Sector Transformation Initiative Project (GESTIP,) to undertake an Environmental and Social Policy Framework to cover both the Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company (NEDCo), as part of the implementation of the Performance for Results (PforR) project funded by the World Bank.

The objective of the assignment is to assess environmental and social risks and impacts of determined project activities, recommend measures to avoid, minimize, reduce or mitigate the risks and impacts and develop plans for managing and monitoring the mitigation measures. Furthermore, prepare an ESMF that establishes procedures to screen, assess, manage and monitor mitigation measures of environmental and social impacts of sub-projects when details are identified.

The Ministry of Energy is therefore requesting the EC to make available to the consultant, Mr. Yaw Amoyaw-Osei, any relevant information for the assignment. In this regard, the consultant will be requesting directly from the EC the specific information required.

Kindly also indicate to us your liaison or focal person for this assignment and provide us with his/her relevant contact information to enable effective collaboration for the successful implementation of this assignment.

BRENDA LARYEA ADJAPAWN (MRS)
DIRECTOR HRM
For Hon. Minister

cc: HON. MINISTER
CHIEF DIRECTOR
PROJECT COORDINATOR, GEDAP/GESTIP
MR. YAW AMOYAW-OSEI, CONSULTANT

Tel : +233 (0) 302 683 961-3
Email : info@energymin.gov.gh
Website : www.energymin.gov.gh



MINISTRY OF ENERGY

P. O. Box SD 40 Stadium, Accra
Digital Address : GA-107-2970

Kindly quote this number and date on all correspondence

My Ref. No. PURC/PCT/GESTIP/V.2/190

Your Ref. No.

Date: 2/03/2022

The Executive Secretary
Public Utility Regulatory Commission (PURC)
South Ridge,
Accra

Dear sir,

DEVELOPMENT OF AN ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR ECG & NEDCO'S ACTIVITIES UNDER PFORR – ACCESS TO RELEVANT INFORMATION

The Ministry has contracted Mr. Yaw Amoyaw-Osei, an Environmental and Social Consultant based in Ghana, under the Ghana Energy Sector Transformation Initiative Project (GESTIP,) to undertake an Environmental and Social Policy Framework to cover both the Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company (NEDCo), as part of the implementation of the Performance for Results (PforR) project funded by the World Bank.

The objective of the assignment is to assess environmental and social risks and impacts of determined project activities, recommend measures to avoid, minimize, reduce or mitigate the risks and impacts and develop plans for managing and monitoring the mitigation measures. Furthermore, prepare an ESMF that establishes procedures to screen, assess, manage and monitor mitigation measures of environmental and social impacts of sub-projects when details are identified.

The Ministry of Energy is therefore requesting the PURC to make available to the consultant, Mr. Yaw Amoyaw-Osei, any relevant information for the assignment. In this regard, the consultant will be requesting directly from the PURC the specific information required.

Kindly also indicate to us your liaison or focal person for this assignment and provide us with his/her relevant contact information to enable effective collaboration for the successful implementation of this assignment.

BRENDA LARYEA ADJAPAWN (MRS)
DIRECTOR HRM
For: Hon. Minister

cc: HON. MINISTER
CHIEF DIRECTOR
PROJECT COORDINATOR, GEDAP/GESTIP
MR. YAW AMOYAW-OSEI, CONSULTANT

Tel : +233 (0) 302 683 961-3
Email : info@energymin.gov.gh
Website : www.energymin.gov.gh



MINISTRY OF ENERGY

National Petroleum Authority (NPA)
6 George Walker Bush Highway,
Accra

Dear sir,

DEVELOPMENT OF AN ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR ECG & NEDCO'S ACTIVITIES UNDER PFORR – ACCESS TO RELEVANT INFORMATION

The Ministry has contracted Mr. Yaw Amoyaw-Osei, an Environmental and Social Consultant based in Ghana, under the Ghana Energy Sector Transformation Initiative Project (GESTIP,) to undertake an Environmental and Social Policy Framework to cover both the Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company (NEDCo), as part of the implementation of the Performance for Results (PforR) project funded by the World Bank.

The objective of the assignment is to assess environmental and social risks and impacts of determined project activities, recommend measures to avoid, minimize, reduce or mitigate the risks and impacts and develop plans for managing and monitoring the mitigation measures. Furthermore, prepare an ESMF that establishes procedures to screen, assess, manage and monitor mitigation measures of environmental and social impacts of sub-projects when details are identified.

The Ministry of Energy is therefore requesting the NPA to make available to the consultant, Mr. Yaw Amoyaw-Osei, any relevant information for the assignment. In this regard, the consultant will be requesting directly from the NPA the specific information required.

Kindly also indicate to us your liaison or focal person for this assignment and provide us with his/her relevant contact information to enable effective collaboration for the successful implementation of this assignment.

BRENDA LARYEA ADJAPAWN (MRS)
DIRECTOR HRM
For Hon. Minister

cc: HON. MINISTER
CHIEF DIRECTOR
PROJECT COORDINATOR, GEDAP/GESTIP
MR. YAW AMOYAW-OSEI, CONSULTANT

P. O. Box SD 40 Stadium, Accra
Digital Address : GA-107-2970

Kindly quote this number and date on all correspondence

My Ref. No. NPA/PCT/GESTIP/V.2/91

Your Ref. No. _____

Date. 2/03/2022

Tel : +233 (0) 302 683 961-3
Email : info@energymin.gov.gh
Website : www.energymin.gov.gh



MINISTRY OF ENERGY

The Executive Director
Environmental Protection Agency (EPA)
Ministries,
Accra

Dear sir,

DEVELOPMENT OF AN ENVIRONMENTAL & SOCIAL MANAGEMENT FRAMEWORK (ESMF) FOR ECG & NEDCO'S ACTIVITIES UNDER PFORR – ACCESS TO RELEVANT INFORMATION

The Ministry has contracted Mr. Yaw Amoyaw-Osei, an Environmental and Social Consultant based in Ghana, under the Ghana Energy Sector Transformation Initiative Project (GESTIP,) to undertake an Environmental and Social Policy Framework to cover both the Electricity Company of Ghana (ECG) and Northern Electricity Distribution Company (NEDCo), as part of the implementation of the Performance for Results (PforR) project funded by the World Bank.

The objective of the assignment is to assess environmental and social risks and impacts of determined project activities, recommend measures to avoid, minimize, reduce or mitigate the risks and impacts and develop plans for managing and monitoring the mitigation measures. Furthermore, prepare an ESMF that establishes procedures to screen, assess, manage and monitor mitigation measures of environmental and social impacts of sub-projects when details are identified.

The Ministry of Energy is therefore requesting the EPA to make available to the consultant, Mr. Yaw Amoyaw-Osei, any relevant information for the assignment. In this regard, the consultant will be requesting directly from the EPA the specific information required.

Kindly also indicate to us your liaison or focal person for this assignment and provide us with his/her relevant contact information to enable effective collaboration for the successful implementation of this assignment.

BRENDA LARYEA-ADJAPAWN (MRS)
DIRECTOR HRM
For Hon. Minister

cc: HON. MINISTER
CHIEF DIRECTOR
PROJECT COORDINATOR, GEDAP/GESTIP
MR. YAW AMOYAW-OSEI, CONSULTANT

P. O. Box SD 40 Stadium, Accra
Digital Address : GA-107-2970

Kindly quote this number and date on all correspondence

My Ref. No. EPA/PCT/GESTIP/V.2/92

Your Ref. No.

Date: 2/03/2022

Tel : +233 (0) 302 683 961-3
Email : info@energymin.gov.gh
Website : www.energymin.gov.gh

Appendix 3.0 Engagement Guide / Capacity Needs Assessment Questionnaire**3.1 Ministry of Energy**

Issues
1. Are there functional E&S policies and systems that guide the Commission's operations?
2. What specific purposes are they supposed to serve?
3. Are EC projects/activities subjected to environmental and social screening and environmental permit obtained from EPA?
4. How many projects/activities were subjected to Impact Assessment in say 2018, 2019, 2020 and 2021 and Env. Permits obtained?
5. What were the types of projects?
6. What Unit/Department at EC is responsible for E&S safeguards issues?
7. How many personnel are in the Unit/Department?
8. Is the Unit/Department adequately staffed?
9. What is the existing E&S capacity at the various levels of EC operation (including regional/district)?
10. Does EC have a Stakeholder Engagement Plan (SEP) to facilitate the involvement of stakeholders in project decisions such as:
a. Clean cooking stove manufacturing improvement?
b. LPG market demand promotion, etc.?
c. Any others
11. What stakeholder engagement methods are used for relevant and vulnerable stakeholders?
12. How is EC's complaint redress system or Grievance Redress Mechanism (GRM)?
13. What about sexual harassment policy in the workplace?
14. Are there functional E&S policies and systems that guide the Commission's operations?
15. What specific purposes are they supposed to serve?

3.2 Energy Commission

Issues
1. Are there functional E&S policies and systems that guide the Commission's operations?
2. What specific purposes are they supposed to serve?
3. Are EC projects/activities subjected to environmental and social screening and environmental permit obtained from EPA?
4. How many projects/activities were subjected to Impact Assessment in say 2018, 2019, 2020 and 2021 and Env. Permits obtained?
5. What were the types of projects?
6. What Unit/Department at EC is responsible for E&S safeguards issues?
7. How many personnel are in the Unit/Department?
8. Is the Unit/Department adequately staffed?
9. What is the existing E&S capacity at the various levels of EC operation (including regional/district)?
10. Does EC have a Stakeholder Engagement Plan (SEP) to facilitate the involvement of stakeholders in project decisions such as:
11. Clean cooking stove manufacturing improvement?
12. LPG market demand promotion, etc.?
13. Any others.....
14. What stakeholder engagement methods are used for relevant and vulnerable stakeholders?
15. How is EC's complaint redress system or Grievance Redress Mechanism (GRM)?
16. What about sexual harassment policy in the workplace?

3.3 National Petroleum Authority

Issues

ESMF

1. Are there functional E&S policies and systems that guide the NPA's operations?
2. What specific purposes are they supposed to serve?
3. Are NPA projects/activities subjected to environmental and social screening and environmental permit obtained from EPA?
4. How many projects/activities were subjected to Impact Assessment in say 2018, 2019, 2020 and 2021 and Env. Permits obtained?
5. What were the types of projects?
6. What Unit/Department at NPA is responsible for E&S safeguards issues?
7. How many personnel are in the Unit/Department?
8. Is the Unit/Department adequately staffed?
9. What is the existing E&S capacity at the various levels of NPA's operation (including regional/district)?
10. Does NPA have a Stakeholder Engagement Plan (SEP) to facilitate the involvement of stakeholders in project decisions such as: a. Clean cooking stove manufacturing improvement? b. LPG market demand promotion? c. Any others.....
11. What stakeholder engagement methods are used for relevant and also vulnerable stakeholders?
12. How is NPA's complaint redress system or Grievance Redress Mechanism (GRM)?
13. What about sexual harassment policy in the workplace?

3.4 PURC

Issues
1. Has PURC any functional Environmental and Social (E&S) policies and systems in place?
2. What purpose do they/are they supposed to serve?
3. What Unit/Department at PURC is responsible for E&S safeguards issues?
4. How many personnel are in the Unit/Department and their qualification?
5. Do they require capacity enhancement to perform or support or supervise Environmental and Social (E&S) Safeguards/Assessment functions required of the energy sector institutions?
6. How does PURC address effects of tariff increase on the marginalized and life-line customers?
7. How does PURC ensure impacted communities and vulnerable stakeholders are consulted?
8. Are you satisfied with ECG's and NEDCo's engagement mechanisms to facilitate social inclusion (outreach to the most vulnerable) – in contributing to energy sector service delivery and projects?
9. If not, what is being done or can be done in improving the situation?
10. How effective is stakeholder mapping in addressing their needs (the vulnerable) in the energy sector?
11. Does PURC have personnel with capacity to monitor ECG and NEDCo in their stakeholder planning and engagement activities?
12. If not, can capacity building provision be made under this project?
13. How does PURC ensure the needs of the poor in society are met in the energy sector?
14. How beneficial will it be to make provision in this project for E&S safeguards capacity building in the various institutions (esp. ECG & NEDCo) to improve personnel capacities?

3.5 NEDCo

Issues

Process of Installation 1. What will the installation of prepayment meters involve? - Will this require the mounting/construction of distribution lines? - Will the coverage be in areas with existing distribution lines or both? - Will there be the associated mounting of transformers? - Will it involve the construction of some associated sub-stations? - What will be the specific processes/activities/materials involved in the installation?
Compensation issues arising from the installation 2. How are land-take issues related to such installations handled - Can the installation process affect any private property or space or land or access, etc.? - Can the installation process affect public space/land? - How are compensation issues handled in such cases? - What role does /can the Assembly play in such cases?
Installation contract 3. Who does the installation? - Will the installation be done by third party constructors? - Will the installation be done by NEDCo technicians? - How will the selection of the contractors be done? - What kinds of waste are likely to be generated? - How is such waste generally managed/disposed of?
Beneficiaries 4. Who will be the beneficiaries of the prepayment meters - What is and who are the non-SLT non-strategic MDAs? - Where are these non-SLT non-strategic MDAs found (districts, municipal and metropolitan areas, regions, etc)? - How will the distribution of the prepayment meters to all 6,418 non-SLT non-strategic MDAs be done? d) How will the selection process be done or already done? - What commitments will the beneficiaries have to make? - Will the installation involve removal of some existing/old/obsolete meters? - Will the installation be for 1st time beneficiaries/users of NEDCo distribution?
Post-Installation replacement 5. Average life span of these prepayment meters - What is the average size of the meters? - How frequently are they inspected/maintained/serviced? - What will be the average rate of replacement of such meters? - What usually happens to faulty meters (how are they handled and disposed of)? - Who does the inspection/monitoring and replacement of faulty/defective meters?

3.6 ECG

Issues
1. Are energy sector projects subjected to E&S screening and environmental permit obtained for them?
2. Is there a Unit/Department at ECG responsible for E&S issues?
3. What is the functionality of the E&S Policies and Framework?
4. What is the E&S capacity at the Regional and District levels?
5. How many personnel are in the Division? - Is the Division adequately staffed? - How many projects were subjected to Impact Assessment in 2020 and 2021? c. What were the type of projects?
6. Does ECG have any Gender and Social Inclusion Principles or a sexual harassment policy for the protection of their workers at the workplace?
7. What is the proportion of females to men at ECG
8. What measures are in place to protect workers of all categories?
9. Has ECG a Stakeholder Engagement Plan (SEP) to facilitate the involvement of stakeholders in project decision
10. How is ECG's complaints redress system?

ESMF

11. How different is the complaints redress from ECG's GRM?	How adequate is ECG's GRM?
12. How are the impacted communities and vulnerable stakeholders consulted?	
13. How effective is stakeholder mapping?	

14. How do you set out to meet the needs of the marginalized?						
15. How beneficial will it be for ECG and NEDCO to operate a common ESMF?						
Assessment of Potential Impacts and Risks by the MMDAs						
Potential Impact Areas	Tick likely associated Impacts with Project	Rank Impacts Likely Occurrence				
		1	2	3	4	5
1. Waste handling and disposal impacts (of e-waste from obsolete/old/decommissioned meters, conductors, etc.)						
2. Risk of fire damaging poles or transformers or meters or risk of any of these catching fire						
3. Risk of snakebites						
4. Likelihood of inappropriate siting of poles and transformers and risk of eroded poles falling						
5. Risk of accident (during installation or construction or erection of poles) to community or household volunteers						
6. Risk of tall trees potentially falling on distribution lines or meter poles						
7. Occupational health and safety risks						
8. Public health and safety risks						
9. Risk of spread of HIV/AIDS (by influx of workers in the areas of work)						
10. Risk of non-implementation of E&S safeguards and supervision due to inadequate capacity						
11. Potential absence of management commitment affecting E&S safeguards compliance						
12. Potential weak enforcement resulting in poor ESMF implementation and deliverables						

Issues
What challenges limit EPA's monitoring and enforcement functions of energy sector projects, and other activities? How can this be addressed?

Are the energy sector institutions generally compliant with the EA Regulations? How can the challenges of non-compliance be addressed?

3.7 EPA – Head Office

Issues
1. What challenges limit EPA's monitoring and enforcement functions of energy sector projects and programs? How can this be addressed?
2. Are the energy sector institutions (esp. ECG & NEDCo) compliant with the EA Regulations? Rank their level of compliance and by name of the institutions
3. How can the challenges of non-compliance be addressed?
4. In what way can the Agency be supported to enhance effective functioning (including achieving compliance in the energy sector)?
5. How relevant is the Agency's regional /district offices in ensuring effective monitoring and enforcement functions of the energy industry?
6. How can the regional offices be strengthened to carry out their roles?
7. In how many districts is the EPA present?
8. How effective and contemporary is the Energy Sector EA guideline?
9. How can EPA provide custom-made training for the institutions to facilitate compliance/implementation of ESMF?

3.8 EPA - Institute of Environmental Studies

3. In what way can the Agency be supported to assist ECG and NEDCo, etc. to enhance effective Environmental and Social (E&S) Safeguards performance (including achieving compliance in the energy sector)?
4. What customized E&S Safeguards training program with practical components Can the Agency (Training School) design for the Energy Sector institutions? Also training in generated E-waste handling and management by the Energy Sector institutions
5. Can the Agency (Training School) design customized E&S Safeguards training program with practical components for MMDAs to effectively support/complement Energy Sector institutions under this project? Which similar E&S Safeguards training program has been carried out?
6. What are the cost components and ranges for such training programs?

3.9 EPA - E-waste Secretariat

The ESMF for ECG and NEDCo components of the ESRPforR funded by the World Bank is exploring the proper handling/management options for generated E-waste in the energy sector. Some of the e-waste streams expected under the project include decommissioned, damaged or defective transformers, conductors, etc., thousands of replaced postpaid meters and office and institutional end-of-life EEE (e-waste), e.g. air conditioners, computers, laptops, printers, etc.

1. What is the current situation with e-waste handling/management in the energy sector, particularly with respect to ECG and NEDCo's operations?
2. If unsatisfactory, what measures can be recommended to enhance institutional capacity and systems to properly handle e-waste generated?
3. Which of the following E-Waste Management Companies are accredited to manage e-waste in the country, and have the capacity to manage those from the Energy Sector?

Name of Company	Contact	Response/Comments
a) Jekora Ventures Ltd	Email: info@jekoraventures.com Tel: 0289673514	
b) Zoomlion Ghana Ltd	Email: info@zoomlionghana.com Tel: +233 307 019 199	
c) Green Advocacy Ghana	Email: info@greenadghana.com Tel: 0243223864	
d) Zeal Environmental Technologies	Email: info@zealenvironmental.com Tel: +233 553753834/ +233 501301277	
e) Presank Enterprises	Email: info@presank.com Tel: +233 244775828/+233 243803910	
f) Atlantic International Recycling Systems	Email: recyclinginternational@aol.com Tel: 0302 776976	
g) J. Stanley Owusu Ltd	Email: vcbs@jso-group.com	
h) Electro Recycling Ghana	Tel: 0243776026	
i) City Waste	Email: cwmcl@gmx.net Tel: 0244255782	
j) Sentuo Resource Ltd.	Email: sentuogroup9@gmail.com Tel: 0244845361	

4. Do the EPA offices in the regions monitor e-waste generation by ECG and NEDCo and does the EPA need any form of support to perform its regulatory role and to assist the institutions?
5. Are any of the above companies already involved in managing e-waste generated by ECG and NEDCo?
6. How is the performance of ECG and NEDCo in handling their generated e-waste?

4.0 Consultation Guide – MMDAs

Issues
1. Has the Assembly any functional Environmental and Social (E&S) policies and systems in place to guide its decisions and operations?
2. What specific purposes are they supposed to serve?
3. Are the Assembly's projects/programmes/plans/activities subjected to environmental and social screening and environmental permit obtained from EPA?
4. How many were subjected to Impact Assessment in say 2018, 2019, 2020 and 2021 and Env. Permits obtained?
5. What were the types of projects/plans, etc.?
6. What Unit/Department at the Assembly is responsible for E&S safeguards issues?
7. How many personnel are in the Unit/Department?
8. Is the Unit/Department adequately staffed?
9. What is the existing E&S capacity at the Assembly?
10. Will the Assembly need EIA capacity building to empower its Environmental officers?

ESMF

11. What role does the Assembly play in energy sector/power distribution project implementation and compensation issues?						
12. How does the Assembly promote power/electricity project developments in the Municipality, e.g. in the right of way acquisition						
13. Does Assembly have a Stakeholder Engagement Plan (SEP) to facilitate the involvement of stakeholders in its plans preparation and decisions?						
14. What stakeholder engagement methods are used for relevant and vulnerable stakeholders?						
15. How is the Assembly's complaint redress system or Grievance Redress Mechanism (GRM)?						
16. What about sexual harassment policy in the workplace?						
Assessment of Potential Impacts and Risks by the MMDAs						
Potential Impact Areas	Tick Impacts likely to be associated with the Project	Rank Impacts Likely Occurrence				
		1	2	3	4	5
1. Waste handling and disposal impacts (of e-waste from obsolete/old/decommissioned meters, conductors, etc.)						
2. Risk of fire damaging poles or transformers or meters or risk of any of these catching fire						
3. Risk of snakebites						
4. Likelihood of inappropriate siting of poles and transformers and risk of eroded poles falling						
5. Risk of accident (during installation or construction or erection of poles) to community or household volunteers						
6. Risk of tall trees potentially falling on distribution lines or meter poles						
7. Occupational health and safety risks						
8. Public health and safety risks						
1) Risk of spread of HIV/AIDS (by influx of workers in the areas of work)						

5.0 Consultation Guide – Civil Society Organizations and Companies

5.1 E-Waste Management Companies

Issues
1. Does your facility have a valid EPA Permit?
2. Does your facility have a Fire Certificate?
3. Does your facility have a DFI certificate?
4. Have you ever been audited by the EPA to meet the EPA guidelines for e-waste and hazardous management?
5. Is your company responsible for collecting and transportation of e-waste materials to your facility? • Location of site • Challenges • Solution
6. How long have you been operating?
7. What types-of e-waste do you handle? (old meters, decommissioned transformers, large office/household appliances e.g. laptops, fridges, printers/copier systems, CRT monitors, etc.)
8. Is the e-waste segregated at source or during collection or dismantling process?
9. What is the storage/processing capacity (in tons) of the company (per week, month or year)?
10. What is the procedure for handling e-waste and the waste generated?
11. What are the risks of e-waste ending up in the hands of unlicensed informal recyclers?
12. Is the facility a handing over, receiving, transporting, or dismantling facility?
13. Is your facility able to recycle e-waste?
14. What waste types are generated during the process and how is it disposed of and quantities?
15. Are there risks of e-waste ending up in the hands of unlicensed e-waste companies?
16. What challenges are associated with e-waste handling and disposal?
17. Staff trained on Environmental and safety measures?
18. Are the COVID-19 protocols observed at your facility?

Appendix 6.0 Engagement and Capacity Needs Assessment Outcomes

6.1 Ministry of Energy

Date: March 8, 2022	Respondent: Bertrand Kwaku Boafo - Environment and Social Safeguards Specialist Email: boafoansante@gmail.com Tel: 0244400574
Discussions	
1. Functional E&S Policies and Systems in Place The Ministry has a draft Health, Safety, Security and Environment Policy as part of the larger Draft Energy policy which will be presented to Cabinet in 2022 The Ministry also developed and is implementing an HSE Manual that provides guidelines for the development of: • Standard Operating Procedures • HSE Records retention standards, • HSE Management system • Incident notification and investigation The Policies show governments direction in terms of HSE in the energy sector.	

2. E&S Safeguard Management The Health, Safety, Security and Environment Unit is responsible for handling the E&S issues of the Ministry. The unit is made up of 2 personnel with one holding an MSc in Environment, Health and Safety and the other a BSc in Environmental Science.
3. E&S Coordination Functions in the Energy Sector • There is inadequate E&S coordination and collaboration but where it's required, the PIU provides the necessary support. • The HSSE Unit also coordinates with the technical directorates on HSE issues, especially climate change issues
4. Integration of E&S Issues into Sector Development Processes and Plans Within the energy sector, broadly, processes are fragmented along institutional lines. Efforts being made to integrate and streamline E&S issues into development processes are rather slow.
5. E&S Risk Management Plans as Mainstream Subject • To make E&S risk management planning a mainstream subject of the planning process, effective mechanisms for coordination and integration of relevant institutional roles will be required. For instance, the institutions involved in the GESRP lack a collaborative arrangement within the sector with regards to E&S assessment. • Occupational health and safety and environmental issues form part of the medium-term plan of the energy sector.
6. Capacity Building • Training on the importance and processes of Strategic Environmental Assessment is key to looking at HSE issues at the strategic level. • Training on EIA and reviewing EISs is required since the Ministry forms part of the technical team that review energy related EIAs at the EPA
7. Recruitment of Environment and Social Development Specialists to Support Programme Implementation • In recruiting environmental and social development specialists at the PIU to support the programme in planning, management and reporting on E&S, the specialist will: ○ Ensure coordination on E&S performance among the implementation agencies leading to expected successful project outcomes. ○ Support the building of capacity of staff of these agencies. • The Specialists would require a dedicated budget for monitoring and supervision.
8. Facilitatory Role by PIU in Information Disclosure • The PIU should encourage the institutionalization of information disclosure to ensure beneficiary agencies publicly disclose their E&S policies and the framework. • The PIU should also ensure that program related E&S documents are publicly disclosed.

6.2 Energy Commission

Date: April 4, 2022	Respondent: Dr. Vitus Tankpa - Head, SEITA Unit Email: tankpav@energycom.gov.gh/lastvitus@yahoo.com Tel: 0201240400
Discussions:	
1. Functional E&S Policies and Environmental Permits • The Energy Commission (EC) has no functional E&S policies to guide. • The EC as a regulator of the power sector does not subject its projects to environmental and social screening and does not need an environmental permit from EPA. • It rather ensures that all related sector projects undergo environmental and social screening, and an environmental permit is obtained from the EPA before the EC License can be granted to the project proponent.	

2. Energy Commission E&S Safeguards

- The Social, Environmental Impact and Technology Assessment (SEITA) Unit is responsible for E&S safeguards issues.
- The unit is not adequately staffed with only 4 personnel at post.
- There is no existing E&S capacity at the regional and district level.
- The EC needs E&S safeguards capacity building for the SEITA unit to efficiently perform E&S functions and be able to facilitate sector related project impact assessments.
- Training courses at the Institute of Environmental Studies and attending the International Association of Impact Assessment conference will help the SEITA unit to build sufficient capacity in E&S safeguards.
- Trained personnel will serve as trainers, providing E&S safeguards capacities in various operational levels (especially regional offices).

3. Stakeholder Engagement Plan (SEP)

- The EC has an SEP, especially for clean cooking stove manufacturing improvement, which helps them facilitate involvement of stakeholders in project decisions.

4. Grievance Redress System (GRM)

- The Human Resource (HR) Manager of the EC usually sets up a grievance redress committee to deal with complaints received by the office of the HR.

6.3 NPA

Date: 22/03/2022	Respondent: Mrs Gloria Nyanteh – Head Monitoring and Evaluation Email: gnyante@npa.gov.gh Tel: 0244936076
Discussions	
1. Environmental and Social Policies and Framework	
• The National Petroleum Authority (NPA) is the regulator of the petroleum downstream industry in Ghana. It was set up by an Act of Parliament, NPA Act, 2005, ACT 691. The Act mandates the NPA to regulate, oversee and monitor activities in the petroleum downstream industry and, to establish a Unified Petroleum Price Fund and to provide for related purposes. • The NPA's operations are guided by the following laws and regulations: - o Act 691: NPA Act, 2005; - o LI 2186: NPA (Prescribed Petroleum Pricing Formula) Regulations, 2012; o LI 2187: NPA (Petroleum Product Marking) Regulations, 2012; o LI 2222: NPA (Prescribed Petroleum Pricing Formula) (Amendment) Regulations, 2016; and o LI 2251: NPA (Bulk Road Vehicle Tracking and Volume Monitoring) Regulations, 2016. • The activities of the downstream industry include refining, shipping, exportation, marketing, and distribution amongst others as specified in sub-section 2, section 11 of Act 691. • NPA has an HSSE unit in place. However, they are not fully functional to facilitate sector project EIA processes for decision making	
2. Unit Responsible for Environmental and Social Safeguards	
• The Health, Safety Security and Environment (HSSE) Unit of Inspections Monitoring and HSSE Department is responsible for environment and social safeguard issues and supervision in the Petroleum Downstream Industry • There are currently 9 officers, 1 Unit Head and director	

The Unit is considered to be adequately staffed.
E&S Safeguards Capacity Building NPA personnel requires E&S safeguards training and capacity building under this project
3. Environmental and Social Screening - The Licensing regime of the NPA requires the submission of EPA permit for about 90% of petroleum downstream installations and facilities such as refineries, storage depots, etc. - The NPA has an HSSE Unit in place. However, they are not fully functional to facilitate sector project EIA processes for decision making.
4. Environmental and Social Capacity Levels The existing Environment & Social capacity at the various levels of NPA's operation include: - Management Level 2; - Supervisor/ Officer o Greater Accra 5; o Western Region 2; o Ashanti Region 2; and o Volta Region.
5. Stakeholder Engagement Plan (SEP) - NPA has an SEP which is drawn as and when projects come up. The current project ongoing is the Piloting of the Cylinder Recirculation Model (CRM) and subsequent nationwide rollout. - The Ministry of Energy through GESTIP engaged the services of a consultant to develop an LPG Promotion Communication Strategy and Implementation Plan. - The strategy and implementation plan are expected to achieve consumer and stakeholder education and awareness broadly including individual safety, environmental impact, product availability and accessibility, cost effectiveness (Affordability), and job creation Stakeholder Engagement Methods Stakeholder engagement methods used for relevant and vulnerable stakeholders are - Door to door - Regional stakeholder engagements - Constitution of committees including all relevant stakeholders
6. Grievance Redress Mechanism (GRM) The NPA has various means of redressing complains of stakeholders. These include but not limited to: - Online Complains form - Toll Free number - Customer lines - Dedicated email address - Submission of concerns through writing to the Chief Executive for the necessary action to be taken. Sexual Harassment and Gender-Based Violence Policy The NPA has a documented harassment policy for its staff that that spells out the GRM

6.4 PURC

Date: 22/03/2022	Respondent: Gershon Vivor – Director Email: gvivor@purc.com.gh Tel: 055 774 0003
Discussions:	

1. Environmental and Social Policies and Systems • PURC's E&S policy and system is encapsulated in the Social Performance Indicators and its purpose to ensure Customer Satisfaction. • There is the need to examine the current social impact key performance indicators. • The Energy Service and Performance Monitoring (ESPM) Directorate is responsible for all E&S issues. • There are five (5) personnel in the directorate, made up of one (1) Director, two (2) Senior Managers, one (1) Manager and one (1) Assistant Regulatory Engineer. • The PURC has developed a means to identify life-line customers who are likely to be affected by tariff increases for support.
2. Stakeholder Engagement Plan (SEP) • SEP requires that affected communities and vulnerable groups are consulted during an Environmental Assessment (EA). An example is the use of focus group discussion to capture concerns and reflect them in EA documents. • Stakeholder mapping helps to focus on specific concerns of the vulnerable and the challenges they face in accessing benefits and when applicable, the available or required subsidies. • The ESPM Directorate is open to in-house capacity building to enhance their roles in supporting or supervising E&S Safeguards/Assessment functions that are required of the energy sector institutions
3. Environmental Assessment System for Vulnerable Customers • EA system and service delivery integrates universal design principles to facilitate access to differently abled, senior citizens, women, and other vulnerable groups. • Disaggregated data on beneficiaries including women, differently abled, below poverty line, ethnicity and minorities is periodically traced with respect to access to services.
4. PURC's Oversight of ECG & NEDCo's Operations • There is a consistent regulatory compliance monitoring within PURC's operational areas. • PURC has personnel with sufficient capacity to monitor ECG and NEDCo's stakeholder engagement mechanisms to facilitate social inclusion and believes that such mechanisms should be worked on. • ECG and NEDCo need to measure consumer satisfaction and will require capacity building.

6.5 NEDCo

Date: 03/03/2022	Respondent: Stephen Kpalega Ontoaneyin – Geomatic Engineer Email: stephen.ontoaneyin@vra.com Tel: 0246019638
Discussions	
1. Process of Installation The processes of installation are • Completion of service application forms • Inspection and certification by a certified electrician • Capturing customers' GPS information and personal data into the eGIS system • Estimating cost of installation and issue of quotation for customers to pay • Installation of the meter at the customer's premises The materials needed are: Meters; 25mm² ABC conductors; Service poles; Insulators. The process will not require the mounting of distribution lines and the construction of associated sub-stations, but it will cover areas with existing distribution lines or both.	

2. Compensation issues Arising from the Installation • Installation of service pole will not affect private or public space, land or access • For compensation, the owner of the asset must first show proof of ownership. The affected asset is then valued by a certified valuer and the cost of damage is established and agreed upon by both parties. NEDCo then pays the affected person the agreed cost of damage. • The Assembly can assist in sensitizing the customers to accept the metering technology. This will minimize the risk of rejection of the meters by the customers. • The assemblies are also responsible for markets areas where some of the meters may be installed. • NEDCo has no structured system and documented procedures for compensation payment such as a formal Resettlement Policy Framework • Rarely (this only occurs when new sites are being acquired for substation construction. With regards to power lines, in as much as possible, utility right of way is mostly used. • It will be necessary to develop RPF to guide all compensation processes to be consistent with best practice • It will be beneficial to develop a sector industry wide RPF
3. Installation Contract • Installation will be done by NEDCo technicians and not third-party contractors
4. Waste Generation in Installation Process • No waste generation is foreseen in meter installation for new customers. • Minimal waste (retired old meters) is foreseen in situations where the meters are for replacements. The decommissioned meters are returned to the NEDCo warehouse for disposal • NEDCo does not have a laid down procedure for disposing waste from meter installation
5. Beneficiaries of the Prepayment Meters • The beneficiaries are non-SLT non-strategic MDAs ie MDAs except Health centres, Security services and Prisons whose demand is less than 100kVA. • non-SLT non-strategic MDAs are found in districts, municipal and metropolitan areas, regions or towns. • Distribution of prepayment meters will be done according to the existing number of non-SLT non-strategic MDAs as well as the outstanding receivables of each. • The MMDAs will be engaged before installation to sensitize them on the use of the new meters. New MMDAs structures will have to be certified by a certified technician before the meters can be installed. MMDAs will provide a suitable location for the meter installation in situations where the meters will not be mounted on a pole. • New MMDAs' structures will require that the new service connection fee set by PURC is paid before the installation is done. • Installation will be for both first time beneficiaries and users of NEDCo distribution
6. Post-Installation Replacement • The average size of the meters are 233mmX130mmX67mm. They will be inspected /maintained/ service 2 times in a year and faulty meters retired to the NEDCo warehouse. Replaced of meters will be done in an average of 10yrs. • Inspection/monitoring and replacement of faulty/defective meters will be done by NEDCo staff
7. Environmental and Social Issues • NEDCo projects are subjected to environmental and social screening and environmental permit obtained from EPA • In 2020 and 2021 no NEDCo project/activities were subjected to Impact Assessment and no Environmental. Permits were obtained. However, although one project was handled by NEDCO but the environmental permit was obtained by VRA before the operationalization of NEDCO • There are no E&S policies and systems at NEDCo, however, NEDCo relays greatly on VRA's E&S policies. The Engineering Services Department are responsible for E&S issues with just one personnel in the department • There are no E&S capacity at the various levels of NEDCo's operation (regional, district, etc.) • A joint E&S screening tools development by NEDCo and ECG will help synchronise activities within the power industry • NEDCo could be assisted to develop an in-house E&S safeguard policy and system that will be beneficial.

8. Stakeholder Engagement Plan & Grievance Redress Mechanism - NEDCo has no Stakeholder Engagement Plan (SEP) to facilitate the involvement of stakeholders in project decisions hence there is no stakeholder mapping and needs identification set out to meet the needs of the marginalized/ life-line customers - There is no complaint redress system or Grievance Redress Mechanism (GRM)
9. Gender related issues There are no laid down policy document to guide gender related matters such as ratio of male and female sexual harassment etc in the workplace
10. Decommissioning and waste disposal - Decommissioned meters are returned to the NEDCo warehouse for disposal and are piled there for now - The range of e-waste generated include decommissioned transformers and conductors, Office and institutional home furnishings (e.g. Air conditioners, etc) - The quantity of e-waste generated over 5 or more years are not readily available • NEDCo require support to guide disposal of its e-waste

6.6 ECG

Date: 10/03/2022	Respondent: Emmanuel Asante - Environmental & Social Officer Email: kkasante@ecggh.com Tel: 0276867876
Discussions:	
1. E&S Screening All projects are subjected to E&S screening to decide if a proposed project requires a full EIA, Preliminary Environmental Report, or no further environmental assessment is required beyond the Initial Assessment.	
2. E&S Unit/Department - The Safety, Health and Environment (SHE) Division is responsible for assessing/managing E&S risks and impacts. - The E&S Officers are responsible to develop and maintain programs for the sound environmental health and safety management. - The SHE Officers within the Division have the capacity and experience to: - Prepare Terms of Reference (ToR) with regards to E&S safeguards instruments and projects, o - Provide guidance to consultants in the preparation and review of the instruments and supervising their implementation.	
3. E&S Policies and Framework Functionality - The ECG's Environmental and Social Management Framework (ESMF) is non-specific, thriving on the Environmental and Social Performance Standards of the International Finance Corporation (IFC) rather than the World Bank's requirements for an ESMF. - The policies and framework that guide E&S assessments are not readily available or accessible on the websites. One has to write formally to request for them, with no timeline prescribed for release of the documents.	
4. E&S capacity at the Regional and District levels There is a limited capacity of ECG's Technical Officers at the regional and district levels. The E&S safeguards, take up responsibilities for E&S management commitment, and availability for safeguards implementation and enforcement	
5. Gender and Social Inclusion Principles - ECG has a Gender and Social Inclusion Policy, approved in February 2020. The objective is to improve organizational culture and operational performance in line with best practice and standards to advance gender equality, diversity, and social inclusion - The Millennium Challenge Corporation in particular supported the development of a Gender Action Plan and the establishment of a Gender Unit in ECG to implement the newly designed policy and plan. - The Gender and Social Inclusion Policy also commits to zero tolerance of sexual harassment in the workplace, more gender equitable recruitment and hiring practices, and maternity and paternity leave. - Even though ECG's Gender and Social Inclusion Policy commits to zero tolerance of sexual harassment, strategies for preventing sexual harassment implementation is not very evident	

6. Proportion of Females to Males at ECG - The Gender and Social Inclusion Policy commits to having a workforce of 40% female, though currently stands at 24.4% females, with 40% in leadership positions (currently 11%) by 2035. - Measures for gender mainstreaming at ECG emphasizes adoption of: - Tools for seeking citizen feedback (gender disaggregated); and - Women safety audit to track career progression of women employees and labour hired (grade wise disaggregated data).
7. Protection of Workers - There are mix of permanent and temporary staff, either hired and managed directly or are contracted through thirdparty agencies or work for them. Improvement in services such as transportation, health, and safety measures must be a requirement for both ECG workers and those of third-party contractors. - Though the national labour law requirements are embedded in the contracting structure, there is the need to have systems to monitor compliances. In addition, contracts should be E&S performance based, and adoption of labour welfare measures and the freedom to join labour unions
8. Stakeholder Engagement Plan (SEP) - ECG has SEP to facilitate the involvement of stakeholders as a key part of the activities involved in the PforR, with the intention of improving service delivery, and seeking citizen's feedback from customers. - The SEP gives a guide on how to engage with all stakeholder groups for projects and activities undertaken by ECG. It is an integral part of Environmental and Social Management System (ESMS) for ECG.
9. ECG's complaints redress system ECG has complaint redress system in the form of a web-based inquiry and round-the-clock customer Call-Centre to receive and address customer and stakeholder complaints.
- It allows for anonymous reporting and for aggrieved parties to provide further particulars to present grievance. - ECG also has active social media pages for engaging stakeholders and customers
10. Difference Between the Complaints Redress system and ECG's GRM - ECG's grievance redress mechanism does not commit to specified timelines by which a complaint will be resolved at every level of the mechanism. For instance, the complaints reporting framework does not state the length of time it will take to resolve/address any specific complaint and when this could be escalated to the next level; and - The framework is also rather generic for application to workers or sub-contractors. It is also silent on how to specifically deal with sexual exploitation, abuse, and harassment cases.
11. Stakeholder Consultation - Impacted communities and vulnerable groups are consulted during an EA process using focus group discussion to capture their concerns and to reflect in EA documents. - ECG's engagement mechanisms facilitate social inclusion - a key pillar of improved energy sector service delivery is the outreach to the most vulnerable. - ECG's engagement mechanisms facilitate social inclusion - a key pillar of improved energy sector service delivery is the outreach to the most vulnerable
12. Stakeholder Mapping Stakeholder mapping helps to focus on specific concerns of the vulnerable, challenges they face in accessing benefits; available or required subsidies.
13. Needs of the Marginalized - Disaggregated data on beneficiaries (women, differently abled, below poverty line, ethnicity, and minorities) is periodically tracked with respect to access to services. - Infrastructure and service delivery must also integrate universal design principles to facilitate access to differently abled, senior citizens, women, and other vulnerable groups.
14. ECG and NEDCO operate a common ESMF - ECG and NEDCo could consider jointly developing E&S screening tools and updating their E&S instruments and to facilitate the updating of the ECG ESMF for the common use of both institutions. - Such an approach will save cost (compare to each institution developing its own but similar ESMF). - It will also facilitate ease of E&S screening, application/ administration, monitoring and compliance performance for sector projects at all levels on the part of EPA.

Assessment of Potential Impacts and Risks						
Potential Impact Areas	Likely Impacts	Ranking of Impacts Occurrence				
		1	2	3	4	5
1. Waste handling and disposal impacts (of e-waste from obsolete/old/decommissioned meters, conductors, etc.)	✓					✓
2. Risk of fire damaging poles or transformers or meters or risk of any of these catching fire	✓		✓			
3. Risk of snakebites	✓	✓				
4. Likelihood of inappropriate siting of poles and transformers and risk of eroded poles falling	✓			✓		
5. Risk of accident (during installation or construction or erection of poles) to community or household volunteers	✓			✓		
6. Risk of tall trees falling on distribution lines or meter poles	✓			✓		
7. Occupational health and safety risks	✓					✓
8. Public health and safety risks	✓			✓		
9. Risk of spread of HIV (by influx of workers in the areas of work)	✓			✓		
10. Risk of non-implementation of E&S safeguards and supervision due to inadequate capacity	✓			✓		
11. Potential absence of management commitment affecting E&S safeguards compliance	✓	✓				
12. Potential weak enforcement resulting in poor ESMF implementation and deliverables	✓		✓			

Date:	Respondent:
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23/03/2022

6.7 EPA – Head Office

	Andriana N K Nelson – Head of EAA Department Email: qandriana@yahoo.com Tel: 0244250575
Discussions	
1. EPA Monitoring and Enforcement Functions of Energy Sector Projects The EPA faces challenges monitoring the projects and programmes of the energy sector mainly because there is a lack of resources, inadequate staff, and financial constraints. There are 18 Regional Offices in the 16 administrative regions and 12 Area/District offices. Proximity of the regional offices to projects increases the efficiency of EPA by reducing cost of monitoring and enforcement. This would make them invaluable for monitoring implementation of approved projects. The regional offices can be strengthened to carry out their roles by realigning staff resources, having an adequate operational budget for the operational phase of projects and EMP implementation monitoring and capacity building.	
2. Energy Sector's Compliance to EA Regulations Although the energy sector is generally considered to be compliant with a 90% rating, their EA guideline was published in 2011 and requires revision. There is need to collaborate with EPA to review and update the EA guidelines to ensure consistency with recent developments and latest technologies in the sector. Also, the continuous training and creating awareness on the importance of compliance to the EA Regulations can further boost the sector's compliance.	
3. Capacity Building of Energy Sector To provide a custom-made training programme for capacity building of institutions, there should be a training needs assessment to identify key focus areas that require attention. The EPA Training Institute can help build and improve capacity of key implementing agencies on E&S assessment and management.	

6.8 EPA - Institute for Environmental Studies

Date: 23/03/2022	Respondents:			
	Name	Position	Phone Contact	Email
	Gifty Tetteh	Acting Director	0501301467	gifty_tetteh@yahoo.co.uk
	Raymond Sallah	Principal Finance Officer	0501302506	sirray20022000@yahoo.com
1. Challenges to Monitoring and Enforcement Functions in Energy Sector EPA'S monitoring and enforcement role is limited due to insufficient resources, inadequate staff and financial constraints.				
2. Capacity Building of Energy Sector by Training School - The Agency's Training School has experts in environmental management, E&S safeguards, Energy management. - There are other institutions that collaborate with the training schools to facilitate practical hands-on training programmes for participants. - The school already provides training in E-waste management and has the logistics for training as well. - The training school can design customised E&S safeguards for MMDAs with practical components to effectively support Energy Sector Institutions. - The school carried out an E&S safeguards training programme for consultants and financial institutions in 2018 and is currently working on E&S safeguards for the constructions and transport sectors. - Training programmes offered by the school cost (subject to change): - GHS 2,500 per person for non-residential programmes; ○ GHS 4,000 per person for residential programmes (includes accommodation, feeding and course fee).				

7.0 Consultation Outcomes – MMDAs 7.1

Tamale Metropolitan Assembly

Date: 1/04/2022	Respondents: Ibrahim Mustapha Devt Physical Planning Officer Tel: 050 806 6609 Email: imustapha915@gmail.com Sadick Sadisu Physical Planning Officer Tel: 054 927 9232 / 024 764 6751					
1. EIA Systems and Capacity • The Tamale Metropolitan Assembly has established the Statutory Planning Committee which includes representatives from EPA, EHO, Stool Lands, Fire Service, Building Inspectorate Division and Traditional Authorities. The committee is chaired by the MCE with The Metro. Physical Planning Officer as the secretary. • The EIA system screens applications for permits and advises Management on Development controls. • The Assembly's projects/programmes/plans/activities are subjected to environmental screening (EIA) and environmental permit obtained from EPA. Specific projects include: • Construction of: a) Bus Terminal at Datoyili in 2015; and b) Tamale Market Stores in 2015. • The Assembly has no existing EIA capacity but relies on the services of EPA. • EIA capacity building is needed by the Assembly to empower its Environmental Officers						
2. E&S Unit/Department • The department responsible for E&S in the Assembly is the Dept of Social Welfare and Community Development. • The Department has 6 personnel which the Assembly considers to be inadequate						
3. Assembly's Role in Energy Sector /Power Distribution Project • The Assembly conducts power needs assessment and includes the gaps in its plans. The Assembly sometimes procures electrical poles and other accessories and liaises with NEDCO to extend electricity to some communities. • The Assembly is not involved in compensation issues. • There is some level of collaboration between the Assembly and the Utility Service Providers to promote power/electricity projects in the District/Municipality/Metropolis						
4. Stakeholder Engagement Plan • The Assembly has a SEP to facilitate the involvement of stakeholders in its plan preparation and zoning decisions • The public consultation/stakeholder engagement methods employed includes sub-committee meetings, public hearings, town hall meetings, general assembly meetings						
5. Assembly's Complaints Redress system and Grievance Redress Mechanism • There is a Public Relations and Complaints Committee (PRCC) Unit. • Complaints come to the Assembly from communities through the Assembly members to the utility service providers and vice versa.						
6. Sexual Harassment and Gender-Based Violence The Department of Social Welfare and Community Development handles issues of sexual harassment and gender-based violence but there are challenges on how to foster close working relationship and the promotion of Human Rights.						
Assessment of Potential Impacts and Risks						
Potential Impact Areas	Likely Impacts	Impact Occurrence Ranking				
		1	2	3	4	5
2. Waste handling and disposal impacts (of e-waste - obsolete/old/ decommissioned meters, conductors, etc.)						✓
3. Risk of fire damaging poles or transformers or meters or catching fire				✓		
4. Risk of snakebites				✓		
5. Likelihood of inappropriate siting of poles and transformers and risk of eroded poles falling				✓		
6. Risk of accident (during installation or construction or erection of poles) to community or household volunteers				✓		
7. Risk of tall trees falling on distribution lines/meter poles					✓	
8. Occupational health and safety risks						✓

9. Public health and safety risks					✓	
10. Risk of spread of HIV (by influx of workers to the areas)					✓	

7.2 Ga South Municipal Assembly

Date: 1/04/2022	Respondents: Francis Abofra 0244878279 francisabofra@gmail.com Shadrack Hammond 0242909148 KingayiKwei@yahoo.com Felix Ofosu Teye Felixofosuteye4@gmail.com	Development Planning Officer Municipal Budget Analyst Municipal Works Engineer
1. E&S Policy The Assembly has an E&S policy in place to guide its decisions and activities in collaboration with EPA		
2. Environmental Screening and Permit The Assembly's projects are not subjected to environmental screening or permit obtained from the EPA.		
3. E&S Safeguards Unit - The Assembly's Works Department and Development Planning Unit is responsible for E&S Safeguards issues. - The Works Dept has 15 personnel whilst the Development Planning Unit has 4 personnel - The Department and the Unit are adequately staffed for their functions.		
4. E&S Capacity The existing E&S capacity in the Assembly is weak and the Assembly needs an E&S capacity building to empower it environmental officers.		
5. Assembly's Role in Energy Sector/Power Distribution Project Implementation - Assembly procures low-tension poles for the communities to enable ECG connect/link them to the national Grid. - Also, the Assembly takes note of the owners of any land space and write to ECG them to be compensated		
6. Stakeholder Engagement Plan (SEP) - The Assembly has a SEP to facilitate the involvement of stakeholders in it plan, preparation and zoning decisions. - Community engagement/Community debar are mostly used in engaging the relevant or vulnerable stakeholders		
7. Grievance Redress Mechanism The Assembly has a Public Relation and Complain Unit, and community members write to the committee.		
8. Sexual Harassment and Gender-based Violence Policy The Assembly has a Social Welfare Department of which its workers write to for redress		
Assessment of Potential Impacts and Risks		
Potential Impact Areas	Likely Impacts	Impact Occurrence Ranking
		1 2 3 4 5
1. Waste handling and disposal impacts (of e-waste from obsolete/old/decommissioned meters, conductors, etc.)	✓	
2. Risk of fire damaging poles or transformers or meters or risk of any of these catching fire	✓	
3. Risk of snakebites	✓	
4. Likelihood of inappropriate siting of poles and transformers and risk of eroded poles falling	✓	
5. Risk of accident (during installation or construction or erection of poles) to community or household volunteers	✓	
6. Risk of tall trees falling on distribution lines or meter poles	✓	
7. Occupational health and safety risks	✓	
8. Public health and safety risks	✓	
9. Risk of spread of HIV (by influx of workers to the areas)	✓	

8.0 Consultation Outcomes – CSOs and Traditional Authorities 8.1 Green Advocacy Ghana

Date: 09/03/2022	Respondent: Bennett Nana Akuffo Project Manager 0244203401 b.akuffo@greenadghana.com
Discussions	
1. Licenses/Permits - Green Advocacy has been in operation since 2010 and operate with an environmental permit, a fire certificate from the GNFS, and DFI certificate, permitting operations. - Green Advocacy has been audited by EPA using the EPA guidelines on E-Waste Management in Ghana and have met the requirements.	
2. E-waste handling - Per the EPA guidelines on e-waste management, Green Advocacy has a Standard of Procedures (SOP) that identifies and minimises risk of pollution. The SOP clearly states and outline environmental and workers' safety guidelines and procedures to ensure a safe working environment. - Green Advocacy is a handing over facility where materials are received, segregated, and handed over. - They employ a colour-coding system which is unique to the company to separate fractions of materials received at their site. - The facility has a storage capacity of about 20-30 tonnes. - The types of e-waste received at their site consists of: - Cables (containing aluminium, steel, copper); - Cathode-ray tubes (CRTs), batteries (lithium-ion batteries); and - Thermoplastics (ECG old meters, decommissioned transformers, and large/office household appliances). - When processing the materials on site, some wastes are produced: - Domestic waste: Handled by Zoomlion Ghana Limited; and - Non-domestic waste: Segregated and stored and passed on to the Project Implementation Unit (PIU), under Ministry of Environment. - Non-domestic wastes which cannot be handled in Ghana is shipped off to Germany for final disposal.	
3. Transportation Issues - Green Advocacy is not directly responsible for transporting e-waste materials to their facility. - Scrap dealers transport materials to the facility in tricycles, located at Old Fadama/Agbogbloshie. - Materials conveyed are mostly not covered and often fall off when in transit.	
4. Risks of Informal Recycling - E-waste ending up in the hands of informal recyclers are usually burned to retrieve the valuable materials such as copper. - Their activities produce harmful substance (mostly hazardous air pollutants) into the atmosphere, harming themselves and the environment.	
5. Challenges in e-waste handling and disposal - Majority of the scrap dealers have little to no knowledge on how to separate waste when picking it up. They end up mixing domestic and non-domestic wastes, and deliver them all to the facility, making it a laborious task for workers at the facility. - Some e-waste containing hazardous materials e.g mercury, delivered to the facility are poorly handled and can be poisonous when inhaled. - Scrap dealers are often without the appropriate PPEs, and sometimes get bruises on the hands when handling the materials. - The company, however, has provided safety gloves to its most consistent suppliers and are mandated to wear PPEs before entering the facility.	

8.2 Africa Centre for Energy Policy

The outcome below was derived from a previous engagement with ACEP during the preparation of the Energy Sector Recovery Programme (2021), Stakeholder Engagement Plan for ECG and NEDCo.

Illegal connections and non-payment for power consumption are adversely affecting the energy sector. The revenue losses from illegally connected meters worsens the already high commercial losses being experienced in the power sector. This raises the need for quick reforms in addressing the challenge of illegally connected SHEP meters. In addressing this challenge, the new meters to be installed have anti-tampered devices. Non-AMR (Automated Meter Reading) meters will be replaced with AMR meter for large customers. These meters can be monitored remotely and help reduce power theft.

Renewable energy is becoming a more competitive option for small businesses. Thus, the government's action on renewable energy has been negatively impacted by the excess capacity burden it faces. As a result, the government has extended its suspension of renewable energy Power Purchase Agreements (PPA) to license for embedded generation (private arrangements between renewable energy suppliers and consumers). This is aimed at sustaining demand for grid electricity to account for the excess capacity over time.

Resolving the issue of excess capacity is the ultimate aim for this project. Enhancing revenue collection through replacement of postpaid meters with prepayment meters, coupled with anti-theft meters, and the replacement of faulty and obsolete meter may lead to decrease in the tariff for energy consumption. Reduction in tariff may remotely attract investors and encourage consumers to use to more energy.

8.3 Traditional Authorities

The outcome below was derived from the Energy Sector Recovery Programme (2021), Stakeholder Engagement Plan for ECG and NEDCo.

Traditional authorities in the project component communities will have roles to play during the implementation of the project especially when community members and property are affected. These roles include:

- Helping to identify affected people;
- Assisting during compensation negotiations;
- Witnessing compensation payment; and
- Helping to resolve conflicts that may arise.

Appendix 9.0 Screening Checklist/ Criteria for Project Components

Activities/Components	Sensitivity Criteria	Level of Assessment
1) Replacement of post-paid meters with prepayment meters for non-strategic MDAs	• A single project activity contract for ECG • A single project activity contract for NEDCo • Replacement of old meters leading to huge e-waste generation and disposal	PEA
2) Replacement of obsolete preand post-paid meters with high incidence of faults	• A single project activity contract • Replacement of 56,427 old meters leading to e-waste generation and disposal	
3) Installation of prepayment meters to all 11,120 non-SLT non-strategic MDAs	• A single project activity contract for ECG • Replacement of old meters leading to e-waste generation and disposal	

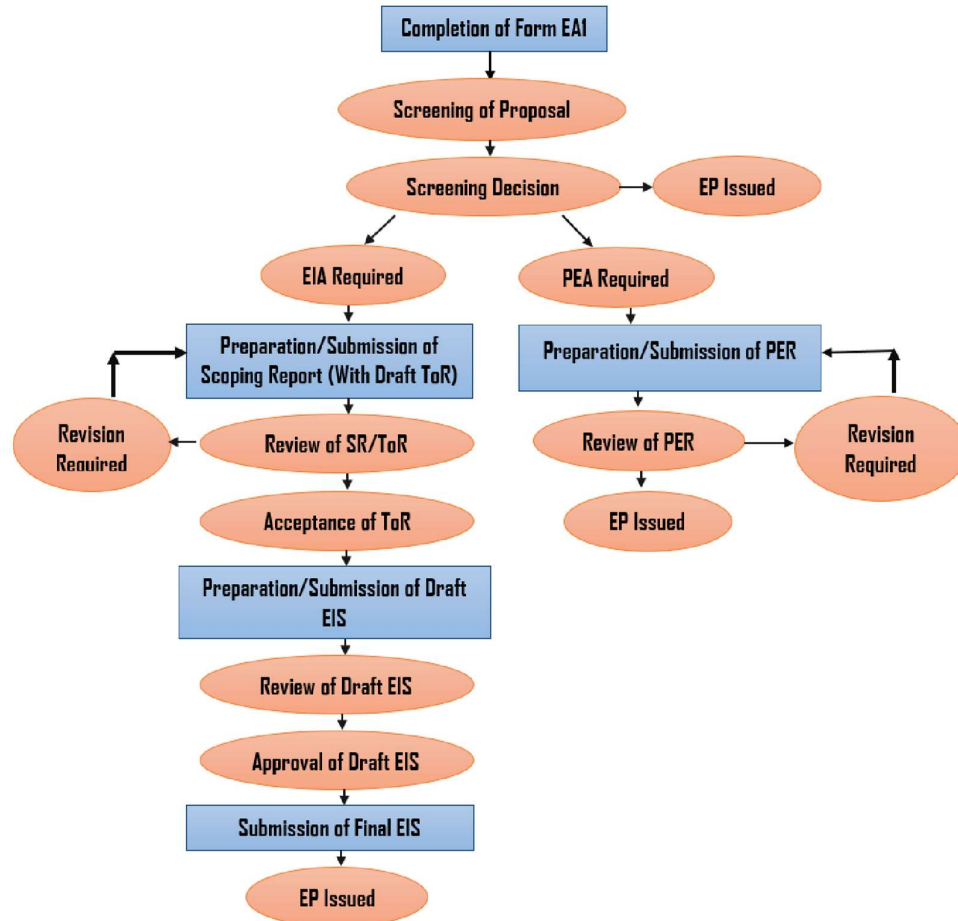
ESMF

4) Installation of 140,000 smart meters at ECG's 8 operational regions for large and target customers	• 8 separate project activity contracts in the 8 ECG Operational Regions • Project activities will lead to e-waste generation and disposal	Initial Assessment
---	--	--------------------

Appendix 10.0 Environmental and Social Assessment Procedure

The World Bank ESS 1 provides guidance on the environmental assessment procedures for World Bank funded projects. The Environmental Assessment in Ghana Guide (EPA, 1996) have also established a process to screen and evaluate all developments, undertakings, projects and programmes which have the potential to give rise to significant environmental impacts. The beneficiary institutions and PIU will ensure that the project activities fall within the provisions under the World Bank policies that will be relevant to the project whilst ensuring that the Ghana EPA regulations and guidelines relevant for the activities are complied with.

Project activities which require permitting will only be developed after securing an Environmental Permit from the EPA. The steps in the figure below will be followed by beneficiary institutions and the PIU, to ensure environmental and social compliance of project activities.



Legend

Proponent's Action

EPA's Action

Screening of projects activities to identify the level of environmental and social assessment

***Figure Showing The E&S Assessment Proc
Ghana***

the project has to be subjected to is presented below. idling environmental and social safeguard issues at ECG and NEDCo, and the the PIU will provide safeguard supervision overall project activities. The unit will

Step 1: Registration of Project Activities:

be directly responsible for the registration of project activities with the EPA as required by Environmental Assessment Regulation, 1999 (LI 1652).

The Environmental Assessment Registration Forms (Form EA1 and EA2, Appendix 9.1 and 9.2 respectively) will be used based on the screening outcome for projects activities. Project requiring Initial Assessment or Preliminary Environmental Assessment will complete the Form EA1 for registration while EIA mandatory projects will complete Form EA2 for registration of project activities with the EPA in accordance with the Environmental Assessment Regulations, 1999 (LI 1652).

Step 2: Screening by EPA

The EPA after receipt of an application (Form EA1), will screen the project and determine the appropriate level of environmental assessment the project should be subjected to. The screening decision will be communicated to proponent (implementing agency of project activities) within 25 days from date of receipt of application, and it will include one of the following:

Approval of project;

Require submission of a preliminary environmental report; Require submission of an environmental impact statement; and Objection of project.

Project activities approved at the initial assessment are equivalent to low-risk classification of the World Bank ESF, and therefore pose minor environmental and social risks. The EPA will register the project activity and issue an environmental permit.

For project activities where Environmental Assessment Form (Form EA2) is submitted, the EPA will request the proponent to carry out a scoping exercise to generate relevant terms of reference (ToR) to guide the EIA study.

Step 3: Conduct Environmental and Social Assessment

For projects activities requiring PEA or ESIA, a Preliminary Environmental Report (PER) or an Environmental and Social Impact Statement (ESIS) will be prepared. The format for the PER/ ESIS is presented in Appendix 10.

The E&S safeguards units/departments of ECG and NEDCo with support from the E&S Safeguard Specialists of the PIU will prepare the Terms of Reference (ToR) for the PEA/ESIA study, consult with stakeholders and seek the World Bank's No Objection on the ToR. After the Bank clears the ToR, the unit/department with the procurement department of the implementing agency will collaborate to recruit qualified consultant(s) to conduct the environmental and social assessment for the project activities following the procurement rules.

The ToR will cover the following key areas:

Overview and description of the project;

Objective of the assignment;

Scope of work (areas the assignment is supposed to cover) and expected deliverables; Required qualification of consultant; and Duration for the assignment.

Procedure for Project Activities Requiring ESIA

After selecting a consultant to undertake the ESIA study for a project activity, the Consultant will be expected to assist the implementing agency register the project with the EPA. The EPA after receipt of the application shall specify the level of assessment the project will be subjected to and request for the proponent carries out a scoping exercise and submit a scoping report with the draft ToR for the ESIA study.

The scoping report will be developed by the Consultant and will set out the scope/extent of the ESIA to be carried out. The draft ToR will also indicate the essential issues to be addressed in the ESIS.

The EPA upon receipt of the Scoping Report with the Draft ToR will review and inform the applicant within 25 days of receipt of the report and indicate whether it has been accepted or not. Where the application is not accepted, the EPA will request the applicant to revise the Scoping Report and submit for review. Where the Scoping Report is accepted, the EPA shall request the proponent (ECG and NEDCo) to submit the ESIS based on the approved Draft ToR.

Step 4: Review and Approval of the ESIA for Project Activities

The consultant will conduct the ESIA study for the project activity and prepare the Draft ESIS with the client's comments incorporated and submitted. The E&S safeguards units/departments will submit the draft ESIS to the EPA for review. After

review and where the draft ESIS is accepted, the EPA will request the applicant to submit a Final ESIS and where there are comments, the applicant will address them in the Final ESIS.

Environmental Permitting Decision

Following submission of the Final ESIS to EPA, the beneficial institution shall be issued an Environmental Permit within 15 working days and issue gazette notices. Where the undertaking is approved, the beneficial institution shall pay processing and permitting fees prior to collection of the permit. The fees are determined based on the Fees and Charges (Amendment) Instrument, 2015 (LI 2228).

Resettlement Procedure for Project Components

For project activities that may lead to restrictions on land use and involuntary resettlement or involuntary land acquisition by the state for public use, the abridged resettlement action plan in section 11 will serve as a guide in preparing an ARAP/RAP for the project activity.

Appendix 11.0

Environmental Assessment Forms

11.1 Form EA1

ENVIRONMENTAL PROTECTION AGENCY	
	
ENVIRONMENTAL ASSESSMENT REGISTRATION FORM	
(To be completed in Duplicate)	
FEE GHC	FORM EA 1
Proponent: _____	
Address for correspondence _____	
Contact person _____	Position _____
Phone No _____	
Email _____	
Environmental Protection Agency (Head Office) P.O. Box M 326 Accra, Ghana Tel: 0302 664697/8, 0302 663499, 0302 662465 Email: info@epa.gov.gh Website: www.epa.gov.gh	
This form shall be submitted to the relevant EPA Regional, District and Zonal Offices. It is important that you read carefully the guide for completing the form before starting.	
1	

GUIDE FOR COMPLETING AN ENVIRONMENTAL ASSESSMENT REGISTRATION FORM

The Environmental Assessment Registration Form is designed to provide enough relevant information to enable the EPA to set an appropriate level of assessment for proposal referred to it. Failure to provide detailed information in a comprehensive manner may delay the assessment process. It is not expected that this form will be appropriate for all purposes and, depending on your proposal, a lengthier document may be necessary in addition to this form.

PROPOSAL

A simple, brief description of the proposal or proposed undertaking is required and must include: input processes, end results, outputs, quantities and timing. Please include flow diagram if available.

LOCATION

A site/block plan is essential.

It should indicate the geographical coordinates of site (Longitude and Latitude), elevation and slope of the site, any nearby areas or features of environmental significance (e.g. proposed or declared reserves, water courses, wetlands) and adjacent land uses, including the nearest homes or areas zoned residential.

SERVICES

Details of water supply, storm water drainage, power corridors, access to and impact on roads and transport can all be significant and should be noted where relevant.

ENVIRONMENTAL IMPACT

Criteria for assessing a project and setting a level of assessment are:

1. The character of the environment
2. The potential impact of the proposal
3. Resilience of the environment to cope with change
4. environmental impacts
5. The input of other statutory decision-making bodies
6. Degree of public interest.

The following potential environmental impacts may be relevant:

1. Impacts on geomorphology, land stability and landscape
2. Impacts on drainage and water quality (surface and ground)
3. Impacts on biota
4. Impacts on access and transport systems
5. Impacts on existing services including power, water and telephone
6. Impacts on existing community facilities
7. Impacts on existing contingency plans for safety and emergency services.
8. Impacts on emission (Gas, Dust, Noise and heat)

9. Management of solid and liquid waste and storm water
10. Impacts on adjacent land uses including any conservation and recreational aspects
11. Impacts of constructional and operational activities
12. Visual impacts
13. Social impacts

Proponents would be required to pay appropriate processing and permit fees in accordance with the current existing LI for fees and charges (Amendment) Instruments.

1. PROPOSED UNDERTAKING/DEVELOPMENT

Title of proposal (general classification of undertaking)

Description of proposed undertaking including unit processes (flow diagram), raw materials, list of chemicals (source, types and quantities), storage facilities, waste by-products (soil, liquid and gaseous)

Scope of proposal (size of labor force, equipment and machinery, installed production capacity, product type, area covered by facility/proposal, market)

2. PROJECT SITE

(Location attach a site plan/map)

Plot/House No..... Street/Area Name.....

Town..... District..... Region.....

Major Landmarks (if any).....

Current Zoning.....

Distance to the nearest residential and or other facilities (in meters) provide coordinates (where possible)

Adjacent land uses (existing and proposed) – (Describe in details and attach pictures)

Site description (immediate activities and adjacent land uses should be described)

3. INFRASTRUCTURE AND UTILITIES

Structures (building and other facilities proposed or existing on site)

Access to water (source, quantity)

Access to power (type, source and quantity)

Draining provision in the project area

.....

Nearness to water body

.....

Access road to project site

Other major utilities proposed or existing on site (eg. sewerage, etc)

4. ENVIRONMENTAL IMPACTS

Potential environmental impacts of proposed undertaking (both constructional and operational phases)

[illegible]

5. CONCERNS

Views of immediate adjoining neighbor's and relevant stakeholders (if applicable provide evidence of consultation to facilitate identification of key issues/impacts)

INDICATE PERSONS / INSTITUTIONS CONSULTED AND THEIR VIEWS AND CONCERNS IN THE TABLE BELOW				
No	Name	Contact Tel/ Email	Location In Relation To (North South East West) Project Site	Concerns / Issues
1				
2				
3				
4				
5				

6. MANAGEMENT OF IMPACTS AND ENVIRONMENTAL ENHANCEMENT MEASURES

[illegible]

7. ATTACHMENTS

Tick appropriate box indicating that the following required documents have been attached.

- ☐ Authentic site plan (signed by a licensed surveyor and certified by survey dept.)
- ☐ Block plan of the site
- ☐ Photographs of the site
- ☐ Zoning letter from Town and Country Planning Department (TCPD)
- ☐ No objection letter from the National Petroleum Authority (NPA) (For Petroleum Products retail outlets (FSS & LPG))

8. DECLARATIONS

I,hereby declare that the information provided on this form is true to the best of my knowledge and shall provide any additional information that shall come to my notice in the course of processing the application. I also declare that the information provided is true.

.....

Signature

.....

Date _____

Use additional sheets where the spaces provided are inadequate.

11.2 Form EA2

ENVIRONMENTAL PROTECTION AGENCY, GHANA



ENVIRONMENTAL ASSESSMENT REGISTRATION FORM

(To be completed in Duplicate)

FEE GH¢7.00

Serial No.

FORM EA2

ASSESSMENT NO:		FILE NO:	
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Environmental Protection Agency (Head Office)
P. O. Box M.326
Accra, Ghana

Tel: +233 0302 664697/8, 664223, 662465
Fax: +233 0302 662690

Environmental Impact Assessment Registration Form

PROPOSED:

Address for correspondence

Contact Person _____ Position _____

Phone No. _____ Fax No. _____

1. Proposed Undertaking/Development:

Sector: _____

Shareholders: _____

2. Proposed Site: _____

Town/Village: _____

(Attach Location Map)

District: _____

Region: _____

.....
Signature

.....
Date

Appendix 12.0 Outline for PER / ESIS

The outline of both reports will take the same format although a PEA study will deal with less significant adverse impacting project activities. A broad outline for the PER/EIS preparation for project activities under the ESMF may include:

- Executive Summary • Assessment of potential E&S risks and impacts
- Introduction • E&S mitigation measures of risks and impacts
- Legal, framework • E&S management plans
- Description of project component • E&S monitoring plans
- E&S baseline conditions • References
- Analysis of project component alternatives • Appendices
- Stakeholder/public consultation

Executive Summary

Overview and summary of the report.

Introduction

General introduction to the project activities including the background, objective, purpose and methodology of the assessment.

Legal framework

Applicable legal, policy and institutional framework including World Bank ESSs and a justification of their relevance.

Description of project component

General description of the project component including project component components and location.

Environmental and social baseline conditions

Description of the environment and social baseline characteristics which include:

- Project location and district characteristics • Education • Biodiversity/vegetation cover
- Demography • Climate • Relief and drainage
- Waste management • Adjoining land use • Geophysical characteristics
- Healthcare

Analysis of project component alternatives

Analysis of alternatives for some key components to help select preferred alternatives that present minimal environmental and social risks and impacts.

Stakeholder/public consultation

Identification of stakeholders, description of strategy for stakeholder engagement and consultation outcomes

Assessment of potential environmental and social risks and impacts Key

E&S risks and impacts that may be associated with project activities.

Environmental and social mitigation measures of risks and impacts

Mitigation measures to prevent, reduce or control the effects of the assessed E&S risks and impacts. These may include replacement, restoration, compensation etc.

Environmental and social management plans

The management plans define steps that will be followed to ensure that required E&S obligations are discharged by appropriate persons with the required capacity. It includes the roles of the institutions or persons, capacity building needs, grievance redress mechanism and estimated budget/cost requirements

Environmental and social monitoring plans

The monitoring plans provide follow up on the accuracy of assessed impacts and the appropriateness of the corresponding mitigation measures. The results of monitoring could prompt required remedial action. The monitoring plan includes the proposed responsible institutions or persons and estimated budget/cost requirements. Detailed cost analysis from prospective consultants and experts to be engaged as part of the monitoring programme will be needed to confirm cost requirements.

References

All articles, reports, books and other sources from which information in the report was sourced from.

Appendices

This will include letters of correspondences, consultation guides and outcomes, E&S clauses, among others.

Grievance Redress Mechanism

The GRM is a fundamental requirement of the Stakeholder Engagement Plan prescribed by the ESS 10. The overall objective of the GRM is to provide an effective, transparent and timely system that shall give aggrieved persons redress and avoid litigation, minimize bad publicity, avoid/minimizes delays in execution of infrastructural works, ensure public health, safety and sustainability of the company's operations. The GRM provides all persons and groups affected by the company's projects and activities, avenues through which they can express their concerns and receive the needed corrective action in an appropriate and timely manner.

This section shows for the different categories of complaints where and how a complainant lodges complaint, how the company responds and how the response is communicated.

At public engagements targeted at projects, attendants shall be informed of the grievance redress mechanism and encouraged to use it. To ensure that all understand what is being communicated these engagements shall be conducted in languages common to the project footprint. This will however be in addition to the regular processes for publicizing our avenues for receiving complaints.

Complaints Related to Construction

- a. Complain letters claiming that the company is trespassing on their land during construction
- b. The Project Engineer will conduct a joint site visit with the complainant
- c. Land documents will be investigated at Lands Commission
- d. If claim is valid, the company will change route of line if it solves the problem.
- e. If no viable alternative is available, the company will opt to negotiate with the owner of the parcel of land, compensate them for their loss and use the same corridor.

Handling Encroachers/Trespassers of land assigned or acquired by the Company

- a. The company notices that someone or some persons are trespassing on their land
- b. The company will first issue a verbal warning
- c. The company will also report such persons to the MMDAs
- d. MMDAs will usually remove such persons
- e. The company may also resort to the law courts because as a Company, they can sue and be sued

Complaints related to Power Surges

A customer requiring power connection to their premises is expected to indicate in their application their intended load. Whenever their load increases beyond what they initially asked for, they must inform the company of this increase.

- a. The company receives a complaint that claims damage to equipment, fire or electrocution
- b. The company investigates from their records if such a surge occurred in the specific area and at what time. This is possible because records are kept of episodes on their network
- c. The company also investigates if other properties experienced the same surge
- d. For fires, the company usually receives a report from the Ghana National Fire Service
- e. If the company is found liable for the damage or fire, the issue is referred to the Legal Directorate for determination of reinstatement due.

Complaints Received through a Call Centre

There is a call center, and the number is available to all (0302 611611).

- a. A problem communicated to the call center is logged.
- b. Passed on the faults or relevant sections of the relevant district.
- c. The faults men or technicians from the relevant sections of that district are sent out to rectify the problem d.
- Feedback is given to the call center
- e. The call center sends a prompt (SMS) to inform customer that the fault has been rectified.
- f. Should a complaint be made at any of the company's offices, the complaint will be logged
- g. The name, phone number and address will be included in the record
- h. Information will be passed on to the faults section
- i. Faults men are sent to rectify the fault
- j. After fault has been rectified, the faults men report back to the Customer Relations Officer

Billing Complaints

- a. Complaints about bills are received by the District Commercial Officer or the District Technical Officer
(sometimes through the call centre)
- b. They receive the bill and take down critical information contained on the bill
- c. Investigations are carried out
- d. Overbilling is rectified
- e. Further investigations may be carried out on the meter.
- f. A faulty meter will be changed – prepaid meters are changed quickly because without it a customer cannot have power.
- g. When the problem is the customer's main switch, they are asked to call for the services of an electrician.
- h. When it is discovered that the problem is as a result of a tempered meter, the customer is made to pay for power that was used without payment and in addition is made to pay a penalty.
- i. To deter others from stealing power, customers who steal power are sent to court.
- j. Customers who make it impossible for scheduled staff to enter their premises to read their meters are disconnected from the pole.

Complaints related to GBV/SE/SH

- a. Investigations and allegations must be in writing and signed by the complainant(s). Trade unions or workers' representatives should also be able to submit complaints on behalf of one or more workers.
- b. The alleged harasser should receive a copy of the allegations and be allowed to respond before the investigation begins.
- c. A thorough investigation should:
 - i. Include interviews with complainants, their witnesses, alleged harassers, and their witnesses.
 - ii. It is good practice that interviewees be accompanied by a trusted colleague or trade union representative.
 - iii. Examine all relevant documents, records, and personnel files if necessary;
 - iv. Provide a written summary of the full investigation to the complainant and the alleged harasser;
- d. Both parties should be allowed to provide comments on the content of this summary before the full report is finalized;
- e. If the report is drafted by an independent investigator, the full report should be submitted to the person and/or department responsible for handling sexual harassment complaints. This report should include who was interviewed, what questions were asked, the investigator's conclusions, and what possible remedies, sanctions, or other action may be appropriate.
- f. Support from outside the company may be used if the complainant is not satisfied with the outcome of internal processes or has grounds to lack confidence in them.
- g. Committees handling sexual harassment cases should include an equal representation of men and women to ensure that the perspectives of both women and men are taken into consideration.
- h. They also need to include representatives of both management and workers. Victims should be represented or accompanied by a representative of them.
- i. All complaints and investigations should be treated confidentially, and the disclosure of information shall be based on a need-to-know basis.
- j. The identity of the complainant should be made known to only the parties involved during the investigation.
- k. The complainant should be protected from retaliation during and after the investigation.
- l. All information about a sexual harassment complaint or investigation should be maintained in secure files.
- m. Survivors of SEA/SH may require access to health, psychosocial, police, justice, safe shelter and livelihood services to begin healing from the experience they complained about.

Procedures for Redress of Grievances

Submission of Complaints A complainant should be:

- An employee, contractor, sub-contractor, community member(s), or customer who is adversely or potentially be affected by the Revenue Protection Project. Anonymous submission will also be accommodated when it is needed to protect the safety of complainant and resolution will not be affected.
- Third parties, such as interest-based NGOs or other stakeholder think-tanks, outside of the project implementation communities, could lodge formal complaints on behalf of the community. However, such third

parties will be required to declare if there are any conflict of-interest issues. Where ECG/NEDCo does not address a complaint satisfactorily, the complainant can submit directly to the PURC or forward the complaint to a higher authority or proceed to the courts, under the laws of Ghana.

The complainant(s) should provide the following information:

- The identity: name(s), gender, address(es) and contact information. A proper identification of the complainant prevents a malicious or abusive use of the Mechanism. It also enables the establishment of a channel of communication in case further information are necessary for a proper processing of the complaint. The GM should guarantee strict confidentiality of complainants' identity. If the party submitting the complaint is doing so on behalf of an affected person or community, it must identify on whose behalf the complaint is made. The complainant must also present evidence that it has been requested to present the complaint on behalf of the project-affected people/person. However, if necessary, the complainants should be kept anonymous if he/she wish to remain so.
- Date of the incident or action giving rise to the complaint (if applicable).
- Description of the concern and any supporting documentation.
- Specific remedy sought (if applicable).
- Any other information as deemed appropriate by the complainant.

The receiving district of ECG/NEDCo should record and document the complaint. See Appendix 12 for a sample of the GM complaint form and Appendix 17 for a sample of the Grievance Register. All staff including those who intern with the Company and third-party contractors are all covered by Insurance.

Notification of Receipt

Within two business days of receipt of the complaint, ECG/NEDCo shall notify the complainant(s) of receipt of the complaint. After acknowledgement of receipt, ECG/NEDCo has the option to request additional information from the complainant(s) at the time of notification.

Screening for Admissibility and Preliminary Assessment

Within five business days of receipt of all requested information about a complaint (if request for further information was made in the notification of receipt) or of the complaint (if no further information was requested), the ECG/NEDCo will assess the complaint to determine its eligibility and develop a thorough understanding of the issues and concerns raised in the complaint. A complaint shall be deemed eligible if:

- The complainant is identifiable and has provided a name and contact details (in case of non-anonymous enquiries and grievances).
- The alleged adverse effect(s) falls within at least one of the two categories of the scope of the GRM. The complainant can submit queries, comments, suggestions, or complaints.
- The complainant is affected by an activity, or an associated activity of an PforR financed project. An activity is deemed associated if:
 - It is directly and significantly related to the activities funded by the WB; and
 - Carried out, or planned to be carried out, contemporaneously with the WB-funded activities and necessary for the financed activities to be viable.
- The complainant(s) should indicate how the Revenue Protection Project has caused a negative economic, social, or environmental impact on the complainant(s), or has the potential to cause such an impact. The complainant(s) should specify the kind of impact which has occurred or may occur.
- The complaint is submitted in good faith and is aligned with the primary purpose of the GM.

Once the screening has been completed, the receiving entity should categorise the complaint (see Table 7) and provide feedback to the complainant on next actions to be undertaken. The receiving entity should also make recommendations and decide on the most suitable actions such as further investigation, complaint resolution, or compliance review.

Notification of Action

Within 10 business days from receipt of the complaint or all further information requested, ECG/NEDCo shall notify the complainant(s) of the decision to process the complaint if it determines the complaint is eligible or reject if ineligible.

When ECG/NEDCo rejects the complaint due to ineligibility, the complainant should be informed of the decision and the reasons for the rejection. The Grievance Redress Office of ECG/NEDCo would engage the complainant before a decision to reject a complaint is made and formally communicated.

If the complainant(s) is not satisfied with the resolution or the lack thereof (in the case of ineligibility), the complainant can forward the complaint to a higher authority (PURC) or proceed to the courts, under the laws of Ghana.

If a complaint is deemed eligible and accepted for resolution, ECG/NEDCo may, depending on the circumstances and the complexity of the situation, investigate the complaint further. The complainant should be informed on the decision to investigate. Procedures carried out during an investigation may include, but not limited to:

- Reviewing documentation filed by complainant
- Meeting with the complainant
- Meeting other stakeholders (e.g., EPA, Energy Commission)
- Consulting scientific literature and publications relevant to the issues of harm raised in the complaint.

Complaint Resolution

If the complaint is about the Revenue Protection Project, then ECG/NEDCo will engage the complainant and other relevant stakeholders to find mutually satisfactory outcomes. If the parties agree to seek joint resolution to the issues, a mutually agreed process will be designed and implemented.

Formulation of Response

Within 20 business days of receipt of an eligible complaint, ECG/NEDCo will provide a response to the complainant, which should include a proposal to address the complaint and an action plan with a timeframe for its implementation. ECG/NEDCo will engage with the complainant and request formal feedback on the proposal.

Once there is a mutually agreed proposal, ECG/NEDCo will formulate a response to address the issues raised in the complaint. Throughout this process, ECG/NEDCo shall maintain dialogue with the complainant(s).

If the proposal is accepted by the complainant(s), ECG/NEDCo will implement it according to the process and timeframe set forth in the proposal. ECG/NEDCo and the complainant(s) will agree on the proposal within five (5) business days after the initial proposal has been presented to the complainant(s).

However, if the proposal is rejected by the complainant(s) and/or the complaint cannot be resolved through the process outlined in the GM, ECG/NEDCo will inform the complainant(s) that no resolution can be reached and close the complaint.

Implementation and Monitoring of Corrective Actions

Once a proposal is accepted by the complainant(s), ECG/NEDCo will promptly start implementing it. The proposed timeframe will depend on the nature of the actions. ECG/NEDCo will inform the complainant(s) in advance and explain the scope of the action plan and the timeframe.

If the complainant(s) believe that the actions have not been satisfactorily implemented, ECG/NEDCo would engage the complainant(s) to determine how to achieve a satisfactory outcome. If such additional engagement does not lead to an agreement, the complaint would be closed. If the complainant(s) is not satisfied with the results, such a person can approach PURC or the courts, under the laws of Ghana.

Closing of Grievance

ECG/NEDCo should consider a grievance closed only if an amicable resolution has been reached and satisfactorily implemented. However, ECG/NEDCo may close a grievance under special circumstances, if several attempts to find an amicable resolution fail. If the complainant(s) is not satisfied with the decision, the complainant can approach PURC or the courts, under the laws of Ghana.

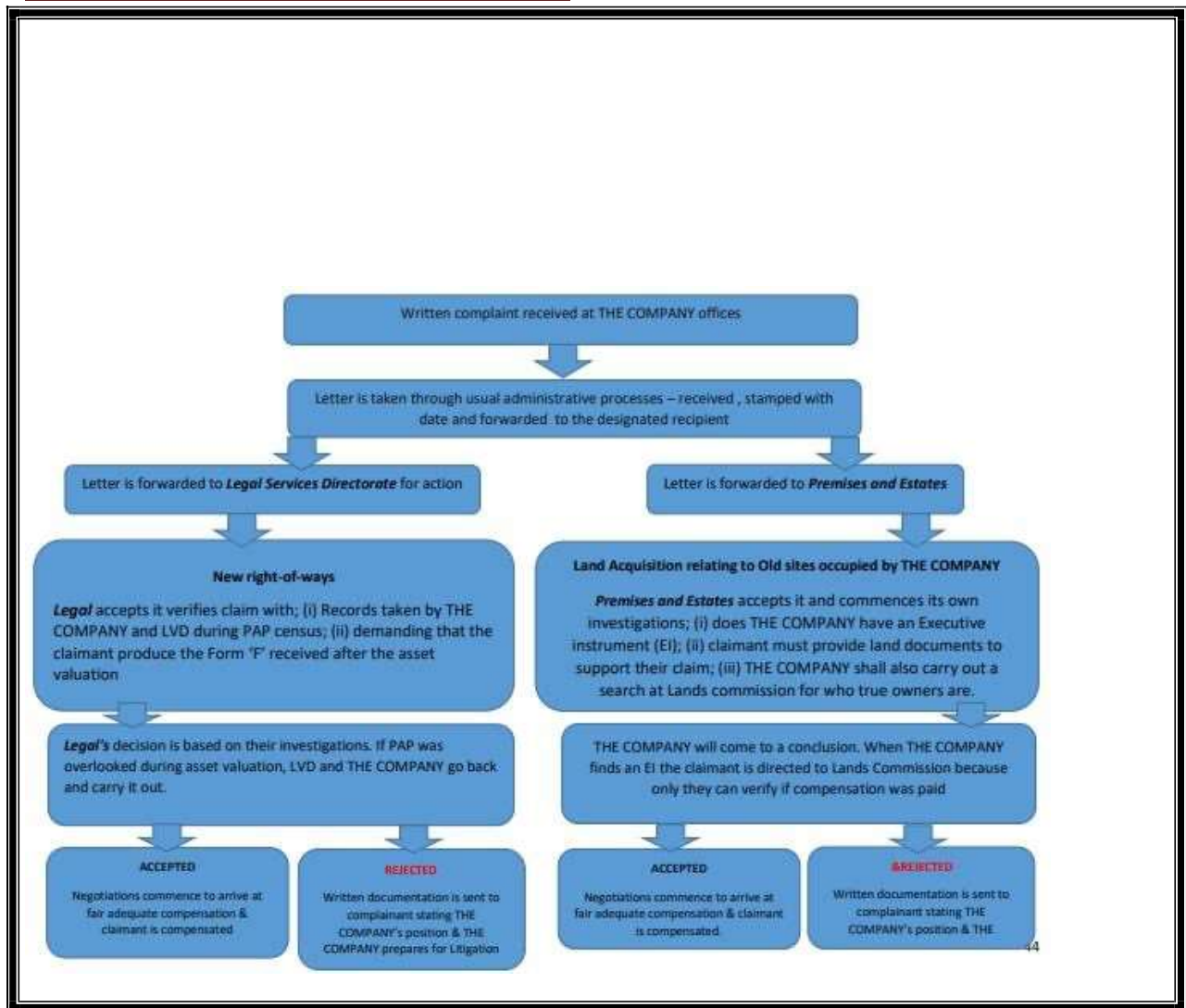
Reporting and Transparency

At the completion of the procedures, an internal report on each grievance, including recommendations should be prepared and documented. Recommendations may be operational corrective actions or improvements to existing policies or procedures. Where possible and appropriate, a corrective action plan should be developed and implemented.

ECG/NEDCo shall present a report to PURC on completion of agreed action and closure of the grievance.

Recordkeeping

The register of all complaints lodged into ECG/NEDCo's Grievance Mechanism as well as all information collected during the Revenue Protection Projects shall be duly filed and archived ensuring restricted access and, where possible, deploying chain of custody measures. ECG/NEDCo shall keep records of lessons learnt while processing the complaints. Table 5 below summarizes the timeline for responding to and addressing grievances.

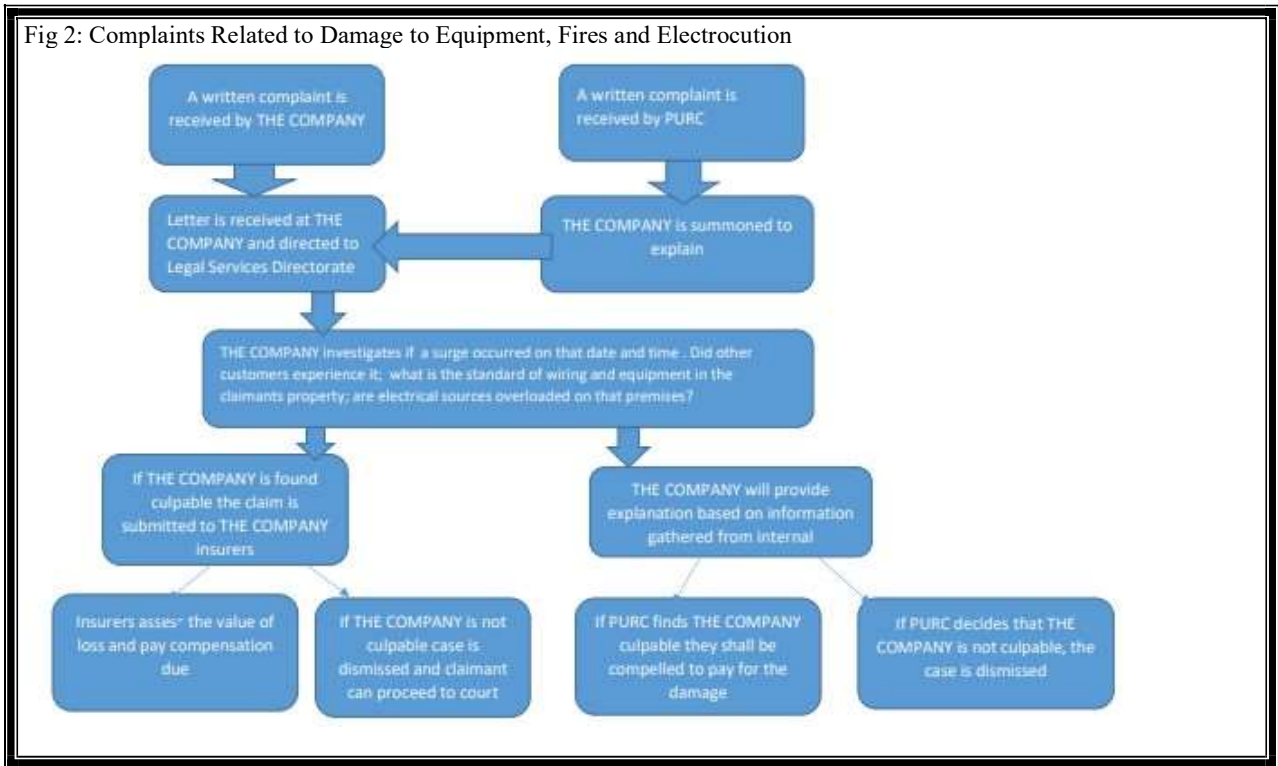


Timelines for Responding to Grievances

Activity	Timeline
Notification of receipt	Within two business days of receipt of the complaint
Screening for admissibility and assessment	Within five business days of receipt of a complaint preliminary
Notification of action	Within 10 business days from receipt of the complaint
Formulation of response	Within 20 business days of receipt of the complaint

Fig 1: Grievance Redress Related to Land Acquisition & Compensations

Fig 2: Complaints Related to Damage to Equipment, Fires and Electrocution



Appendix 14.0 Sample Grievance and Resolution Form

1. Name of Person Raising Grievance: <i>(information is optional and always treated as confidential)</i> Name: _____ Gender: ☐ Male ☐ Female				
Address or contact information for Person Raising Grievance: <i>(information is optional and confidential)</i> E-mail: _____ Phone: _____ Address: _____				
Location where grievance/problem occurred (write in) _____				
2. Category of Grievance:				
☐ Environmental safeguards, social issues, including gender, labour, and resettlement	☐ Grievances regarding violations of policies, guidelines, and procedures	☐ Grievances regarding contract violations	☐ Grievances regarding the misuse of funds/lack of transparency, or other financial management concerns	☐ Grievances regarding of abuse power/intervention or by project government officials
☐ Grievances regarding Project staff performance	☐ Reports of force majeure	☐ Suggestions	☐ Appreciation	
Brief Description of Grievance or Inquiry: <i>(provide as much detail and facts as possible)</i> _____				
Please include any other information that you consider relevant, other matters or facts, including supporting documents: _____				
3. Do you request that identity be kept confidential? ☐ Yes ☐ No				
4. Previous Efforts to Resolve the Complaint _____				
5. Information on Authorised Representative. <i>(If Authorised Representatives are not complainants themselves, their names will be disclosed as needed, to ensure transparency).</i>				
Name	Positions/Organisations	Addresses	Contact numbers	E-mail addresses
Gender: ☐ Male ☐ Female				
Please provide evidence of the authority to represent the complainant which must include the complainant's signature. _____				
Do you request that identity be kept confidential? ☐ Yes ☐ No				

Appendix

15.0 Citizens Engagement Plan

Citizens, acting as individuals or groups, are important actors in development as they are the ultimate client of government, development institutions and private sector interventions in particular jurisdictions. Citizens' input and expectations for change increase accountability in public institutions and facilitate improved development outcomes. Engagement of citizens must therefore be a two-way interaction and give citizens a stake in decision-making. Consistent with the World Bank Group's Strategic Framework for Mainstreaming Citizen Engagement, the project, in engaging citizens, will focus on:

- Understanding the local context;
- Mapping stakeholders;
- Making clear the engagement scope and manage expectations;
- Leveraging government support;
- Defining processes and timelines; and
- Closing the feedback loop

The project will adhere to internationally accepted practices in engaging citizens. Particular attention will be paid to engaging communities, focus groups, CBOs and CSOs at the various locations where the program will be implemented. Regular consultations with stakeholders will be held throughout program implementation to solicit opinions from diverse groups including women, vulnerable and marginalized groups. Aided by the framework of the International Association for Public Participation, five (5) types of engagement will be carried out and it includes:

- Information – Providing the necessary details to the public to understand the goals as well as opportunities of the program.
- Consultation – Dialoguing, listening, and acknowledging the expressed ideas and concerns, needs and motivations of citizens.
- Involvement – Ensuring that the ideas, concerns, motivations of citizens are directly reflected in the program activities.
- Collaboration – Using citizens to collect information, share their contributions and incorporate findings, observations, and comments into program outcomes.
- Empowerment – Providing resources, advice, and assistance to citizens to improve their lot.

A tiered Grievance Redress Mechanism and a system for documenting and reporting utilization of citizens' feedback will be instituted. Monitoring responsibilities will be assigned to communities who are empowered through simplified systems of disbursement, contracting, program documentation, and grievance handling. To promote transparency, ownership and effectiveness, the citizen engagement process will be led by competent local experts and ensure inclusion of women, vulnerable and marginalized persons, academia, Community-Based Organizations and Civil Society Organizations.

Women Engagement

In most Ghanaian communities, women play a critical role in food production and food security. However, they are rarely able to access their equal land and property rights in spite of legal provisions due to tradition and dynamics in household relations. Traditionally, land is mostly owned by males in both patrilineal and matrilineal systems. The eldest son inherits the deceased father in trust of the family thereby denying ownership of family assets by daughters. Women are mostly left with usage rights whilst the men control and make decisions on how the land should be utilized.

Society often assumes that concerns of women can be effectively addressed by their male representatives hence women are not considered as a distinct group of stakeholders. They are therefore not engaged extensively. To address this, the WAFSRP will ensure the inclusion of women in community representative bodies and gives women an opportunity to articulate their interests and preferences through a participatory process.

16.0 Grievance Register

[illegible]

Appendix

17.0

Labour Management Plan

Appendix

This Labour Management Plan provide an overview of the applicable national legislative and World Bank ESS2 provisions and how the risks and issues related to labour will be managed in the implementation of the program. The Labour Management Plans for the individual components will in due course be prepared by the relevant contractors and will be reviewed and cleared by the Supervision consultant/PIU as appropriate.

Assessment of Key Potential Labour Risks

Based on project activities, the labour risks involved with the project are viewed as minimal. Most of the labour risks will be related to extended hours of work mainly installing and configuring meters. The probability of the incidence of child labour or forced labour is also minimal. The project requires technical staff with skills that require experience and education, which will not be possible for children or those below the age of 18 to possess. The issues of migrant and seasonal workers, labour influx or gender-based violence do not apply. A register of all persons under the age of eighteen years employed by the project and the dates of their births will be kept in keeping with Section 60(1) of the Labour Act, 2003 of Ghana. No person under the age of eighteen years shall be employed.

The project will adopt a zero-harassment policy for all of its workers and sub-contractors. The zero-harassment policy will be part of the workers Code of Conduct developed by the project. This policy will be broadcast to all workers through various mediums and several formats. The project will provide an extra layer of supervision for young workers to ensure they are educated of their rights, the project's policies on harassment, intimidation and exploitation.

There are minimal possibilities for accidents and emergencies related to the metering. However, the project through the labour management procedures plan will ensure that all applicable occupational health and safety provisions in Section 118 of the Labour Act, 2003 and International Labour Organizations conventions are observed.

Some of the highlights specific to certain areas in the Labour Act are listed:

Forced Labour

Section 117 interpret forced labour to means work or service that is exacted from a person under threat of a penalty and for which that person has not offered himself or herself voluntarily, but does not include:

- a) Labour required as a result of a sentence or order of a court;
- b) Labour required of a member of a disciplined force or service as his or her duties; and
- c) Labour required during a period when the country is at war or in the event of an emergency or calamity that threatens life and wellbeing of the community, to the extent that the requirement of the labour is reasonably justifiable in circumstances of a situation.

Section 116 highlights the prohibition of forced labour to include:

- 1) A person shall not be required to perform forced labour;
- 2) It is an offence for an employer to exact or cause to be exacted, or permit to be exacted, for his or her benefit forced labour from any worker; and
- 3) Any employer convicted of an offence under subsection (2) is liable to a fine not exceeding 250 penalty units.

Prohibition of employment of young persons in hazardous work (Section 58)

- 1) A young person shall not be engaged in any type of employment or work likely to expose the person to physical or moral hazard;
- 2) The Minister may, by legislative instrument, determine the type of employment that is likely to expose a young person to physical or moral hazard;
- 3) An employer shall not employ a young person in an underground mine work; and
- 4) A person who contravenes subsection (1) or (3) commits an offence and is liable on summary conviction to a fine not exceeding 100 penalty units.

Health of Young Persons (Section 59)

- 1) An employer shall not employ a young person on any work unless a medical practitioner has certified that the young person is in good health and is medically fit for the work; and

Appendix

- 2) Where a person fails to comply with subsection (1) the person shall be ordered by the Minister to have the medical examination conducted.

Brief Overview of Labour Legislation: Terms and Conditions

Appendix

The primary law and regulations that govern employment relationships in Ghana are the Labour Act 2003 (Act 651) and the Labour Regulations. The Labour Act consolidates all laws relating to employment. The act refers to three categories of workers, namely: permanent workers; temporary workers; and casual workers.

Interpretation

Section 78. of the Act defines terms that are applicable in the law

- “Temporary worker” means a worker who is employed for a continuous period of not less than one month and is not a permanent worker or employed for a work that is seasonal in character; and
- “Casual worker” means a worker engaged on a work which is seasonal or intermittent and not for a continuous period of more than six months and whose remuneration is calculated on a daily basis.

The Labour Act distinguishes between a ‘contract of employment’ and a ‘contract for employment’. A contract of employment creates an employer-employee relationship between the parties. This affords the employer and especially the employee protection under the Labour Act. On the other hand, a contract for employment does not create an employment relationship between the parties, but rather a principal-contractor relationship. Here, the contractor is neither considered to be an employee of the principal nor entitled to benefits of employment such as social security contributions. Section 74 of the Act spell out the conditions of a contract of employment:

1. A contract of employment of a casual worker need not be in writing;
2. A casual worker shall;
 - a) Be given equal pay for work of equal value for each day worked in that organization;
 - b) Have access to any necessary medical facility made available to the workers generally by the employer;
 - c) Be entitled to be paid for overtime work by his or her employer in accordance with section 35; and
 - d) Be paid full minimum remuneration for each day on which the worker attends work, whether or not the weather prevents the worker from carrying on his or her normal work and whether it is possible or not, to arrange alternative work for the worker on such a day.

On the other hand, Section 75 of the Act highlights the conditions for a temporary worker:

- 1) A temporary worker who is employed by the same employer for a continuous period of six months and more shall be treated under this Part as a permanent worker; and
- 2) Without prejudice to the terms and conditions of employment mutually agreed to by the parties, the provisions of this Act in respect of minimum wage, hours of work, rest period, paid public holidays, night work and sick leave are applicable to a contract of employment with a temporary worker.

Salary. Wages, Allowances and Deductions

The Labour Act provides that all salary, wages and allowances are payable in cash, in addition to any non-cash remuneration.

Generally, employers are precluded from deducting any amount from the remuneration of their employees – whether it is a pecuniary penalty imposed on the employee or an interest or discount on remuneration advanced to the employee.

However, the Labour Act sets out situations in which an employer can, with the consent of the worker, legally deduct funds from their remuneration in relation to:

- Provident, pension or other funds or contributions agreed to by the employee;
- A financial facility advanced by the employer to the employee or guaranteed by the employer;
- Amounts paid in error or in excess of the employee’s remuneration to the employee;
- Membership fees or contributions to an organisation of which the employee is a member; and
- Deductions for any loss suffered by the employer as a result of damage to its property under the control of the worker; however, no deduction can be made in this regard unless it is shown that the worker is fully responsible for the damage.

Family and Medical Leave

Female employees are entitled to a statutory maternity leave of 12 weeks in addition to any annual leave that they may have. This statutory leave can be enhanced by contractual agreement between the parties. Female employees on maternity leave must be paid their full salary and other benefits while on leave. In addition, a female employee is entitled to

additional leave to be determined by a medical practitioner where it is found that she has developed an ailment as a result of her pregnancy. Leave is also typically granted for bereavement in relation to close family members.

The Labour Act strictly prohibits discrimination of employees based on race colour, national extraction, social origin, religion, political opinion, sex, marital status, family responsibilities or disability. An employee also has the right, by law, to remove himself or herself from a work situation which he or she reasonably believes presents an imminent or serious danger to life or health.

Brief Overview of Labour Legislation: Occupational Health and Safety

The Occupational Health and Safety (OHS) Policy statement (Draft, 2004) is to prevent accidents and injuries arising out of or linked with or occurring in the course of work, by minimizing as far as reasonably practicable, the cause of the hazards in the working environment and therefore the risk to which employees and the public may be exposed. The engagement of skilled and unskilled workforce at various stages of project implementation reiterates the relevance of the OSH Policy to the proposed project. The policy is derived from provisions of the International Labour Organization (ILO) Conventions 155 and 161. The policy document has specific sections on objectives, scope, strategies, activities promotion and awareness creation.

Responsible Staff

ECG/NEDCo, will be responsible for the engagement and management of all project workers. The project manager will be the direct staff responsible for the engagement of project workers, contractors and subcontractors. The project manager will be responsible for the overall management of all project workers and contractors and subcontractors.

Occupational Health and Safety (OHS): Occupational Health and Safety (OHS) will be the responsibility of the HSSE Unit. Contractors will assign a member of staff with responsibility for matters related to health and safety. In large firms, this member of staff may be a specialist in the area of OHS, for smaller firms and sub-contractors a member of staff with training and experience in OHS can suffice. A Code of Conduct for workers is required and will be developed and implemented.

The safety representative will ensure that any complaint on health and safety are recorded and reported to the project safeguards officer.

Training of Workers: The safeguards officer will liaise with the contractors' OSH representative for the necessary capacity building activities of the contractor's management staff and workers. Training of workers in environmental and social standards and OHS will be the responsibility of the project safeguards officer. Training on the Code of Conduct will be conducted by the Project Manager with assistance from the project safeguards officer.

Worker Grievances: The process for addressing workers' grievance will be the Grievance Redress Mechanism of the project.

Policies and Procedures

In an effort to mitigate the environmental and social impact relating to the project, it is the intention that mitigation measures will be put in place by incorporating standardized clauses in the contract documents so that the contractors will be aware of environmental and social obligations under the project. ECG/NEDCo will ensure compliance by contractor/consultants with these clauses.

The project will prevent any gender discrimination on the workplace, including gender pay gap. The project OHS policy will be as follows:

Purpose

The primary purpose of this OHS Policy is the safety and health of all the project employees at work and the protection of the environment and conservation of resources associated with the project. The policy also establishes and defines the authority for the OHS and associate safety systems. The policy will be enforced on all activities of the project and contractors and sub-contractors of the project through contractual arrangements as is appropriate.

Scope

Occupational safety and health (OSH), also commonly referred to as occupational health and safety (OHS), occupational health, or workplace health and safety (WHS), is concerned with the safety, health, and welfare of people at work. Safety is defined as "the well-being of project employees whilst at work or carrying out work duties". Project Employee for the Project is defined as "anyone employed by activities of the project including employees of contractors and sub-contractors on a full-time or a part-time basis.

OSH Management System is the standards, policies, guidelines, that address project worker's safety, monitoring and evaluation of safety, worker's health, work and general environment.

Policy

The obligations of the project under the OSH policy includes the following:

- Compliance with all national associated legislation (for example health associated legislation) and international OSH legislation that are applicable to Ghana and the World Bank;
- Compliance with the Environmental and Social Safeguards of the World Bank;
- Prevention of injury and ill health of all project workers;
- Establishment of safety systems, processes and performance;
- Continuous improvement of Safety Systems;
- Management and mitigation of adverse environmental and social impacts;
- Prevention of use of faulty equipment or sub-standard equipment;
- The project will commit to safety considerations in the conduct of all of its activities and that of contractors and sub-contractors;
- The project will provide systems, processes, procedures, the necessary safety equipment and gears, and training for all project employees so that all activities are conducted in a safe environment;
- Employees will be responsible, subject to their roles, for the maintenance of a safe environment including the assessment of risks and actions to mitigate minimize and manage risks to the safety of the work environment;
- The project will develop an OHS policy and implement systems, processes, supporting policies, and services that are national and international in compliance with national and international legal requirements including industry standards and best practices in relation to safety;
- Employees at all levels have the authority to stop any activity they consider to be a danger to themselves or other workers, the public or the environment. The project is committed to non-retaliation to stop-work actions by project workers; and
- The Environment and Social Specialist of the project is responsible for the implementation and monitoring of the safety management systems of the project. The ESS will develop sub-policies, guidelines, procedures, instructions and training and awareness materials to support this policy.

Dissemination and Awareness

The OSH policy, developed for the project, will be disseminated to all project workers and stakeholders. The information will be dissemination in various formats including an adapted and summarized version.

Age of Employment

The project will be guided by the Labour Act, 2003 which states that the minimum age of employment in Ghana is eighteen (18) years old. In addition to the Employment Act, Ghana is a signatory to the following international conventions related to the minimum age of employment:

- Convention on the Rights of the Child (CRC): “Signed on the 19th April 1990 and ratified on the 9th October 1990” (UNICEF, 2015);
- Minimum Age Convention, 1973 (No.138) (International Labour Organization, 2017);
- Forced Labour Convention, 1930 (No. 29) (International Labour Organization, 2017);
- Worst Forms of Child Labour Convention, 1999 (No. 182) (International Labour Organization, 2017);
- Medical Examination of Young Persons Convention, 1921 (No. 16) (International Labour Organization, 2017); and
- UN CRC Optional Protocol on Armed Conflict (U.S. Department of Labour, 2017).

Employees over the minimum age of 18 and under the age of 21, may be employed or engaged in connection with the project only under the following specific conditions:

- a) The work is not likely to be hazardous and is not harmful to the child’s health or physical, mental, spiritual, moral or social development, and will not interfere with the child’s education;
- b) An appropriate risk assessment is conducted prior to the work commencing; and
- c) The Borrower conducts regular monitoring of health, working conditions, hours of work and the other requirement of ESS2: Labour and working conditions.

The following process will be followed to verify the age of project workers:

All project employees will be asked to produce identification documents (ID) that are acceptable in local laws, employment and human resources practices as “proof of age”. These forms of ID will be birth certificates, national

drivers' licenses and national registration cards. In the absence of one of those forms of IDs the project will apply and document an age verification process.

The age verification process will consist of alternative methods including copies of academic certificates, testimony/affidavits from officials of the schools attended, a medical examination, statements from family members and parish/village officials/local authorities. In addition, all documents will be cross-referenced and subjected to a verification process to ensure the validity of the documents. In instances where the documents are thought to be falsified the project will conduct the same process to ensure their authenticity. In all of the processes the attendant care will be provided to ensure that the applicant or employee's data are protected and their right to privacy is guaranteed.

All copies of the IDs and documents pertaining to the applicant's age and other supporting materials will be kept in files with the human resources personnel. Audits and controls of the process will be a requirement of the contractors and included in the contracts, in keeping with the Labour Act 2003 (Act 651) and Data Protection Act.

In the event that underage workers are found working on the project the following actions will be undertaken:

- Termination of the contract and services agreement immediately as per the Labour Act of 2003 (Act 651);
- Schedule a meeting with the child and seek to determine the reasons for seeking employment;
- Refer the child to other support services including social services and the Ministry of Education;
- Leverage the services of Non-government and Community Based Organizations to assist the child; and
- Consider employing another adult member of the family if the child's family is determined to be vulnerable or in dire circumstances.

The Labour Act 2003 (Act 651) will be used as a guide in the conduct of the assessment of risks associated with persons below the age of 18. The procedure for assessing the risks will be as follows:

- All persons will be asked to provide a medical certificate with the results of a medical examination;
- An assessment will be done of the tasks assigned, to ensure that persons below the age of 18 are not subjected to hazards and risks;
- There will be clear policy guidelines regarding supervision of young persons to prevent exploitation and sexual harassment; and
- Young persons will be provided with educational and awareness information on the policies of the workplace including sexual harassment policies and labour related grievances and the grievance redress mechanism of the project.

Terms and Conditions

The following terms and conditions will apply to project workers in accordance with the Labour Act 2003 (Act 651).

Contracts

- The project, and sub-contractor, subcontractor, and assignees of contracts shall pay rates of wages and observe hours and conditions of employment which are not less favourable than those established in the country (minimum wage);
- Contractors and sub-contractors shall be certified according to the Government requirements for governmental contractors including that contractors are certify that the wages and conditions of employment of all those employed by the contractor in the trade or industry in which the contractor is seeking to contract with the Government are fair and reasonable;
- The contracts will be guided by the principle of collective bargaining is applicable and where there is no minimum wage or rates established in the country, the guiding principle will be of fair wages and reasonable rates commensurate with governmental minimum wage and similar established rates and conditions;
- In keeping with the Labour Act, the contractor shall keep proper wage records and time sheets for all those employed in relation to the execution of the contract, and the contractor shall produce the wage records and timesheets for the inspection of any person authorised by the project or the Labour Commission of Ghana;
- Contractors are required by law, to post conditions of work in conspicuous places informing workers of their rights and conditions of work;

- A subcontractor shall be bound to conform to the conditions of the main contract and the main contractor shall be responsible for the observance of all contract conditions; and
- Contractors and subcontractors shall recognise the right of their workers to be members of the trade unions.

Minimum Wage

All project workers shall be paid a wage that is above or equal to the minimum wage as established by the Government of Ghana. Wages will be paid on a weekly, bi-weekly or monthly basis. Each employee is entitled to a statement accompanying pay that itemised the following: “(a) the employee’s gross wages due at the end of that pay period; (b) the amount of every deduction from his or her wages during that pay period and the purpose for which each deduction was made; and (c) the employee’s net wages payable at the end of that pay period.”

Hours of Work

The maximum number of ordinary hours of work for employees shall be eight hours a day or forty hours a week except in cases expressly provided for in the Labour Act.

Project employees are prohibited from working more than 10 hours per day inclusive of two hours for lunch and rest periods. No person under the age of eighteen years shall be employed or allowed to work. Other provisions related to hours of work will be guided by the Labour Act (Act 651) on this matter.

Contractor Management

It is mandated that the contractor execute the management of the contract in a manner that is acceptable to the client and is in accordance with the World Bank rules and regulations as it relates to ESS2, specifically relating to the selection process for contractors, management of labour issues, including health and safety, procedures for managing and monitoring of performance for contractors, as well as reporting on workers under the project.

Information on Public Records: The Contractor must have in place information on corporate registers and documents relating to the violation of applicable law, including reports from labour inspectorates and other enforcement bodies.

Certification and Approval of Business and Workers: Documentation of approved business licenses, registration, permits and other approvals and workers’ certification/permits and training to perform the work.

Health and Safety: Have in place labour management systems as it relates to organizational health and safety. Records of incidents and corresponding root cause analysis with a corrective mitigation plan. First aid cases, high potential near misses, and remedial and preventive activities required. Identification and establishment of safety committee and records of meetings.

Workers Payroll Records: Documentation of the number of hours work and pay received inclusive of all payments made on their behalf, for example payment made to the National Insurance Scheme and other entitlements regardless of the workers being engaged on a short- or long-term assign mentor fulltime or part time worker.

Community Workers

The construction aspect of the project will envisage the hiring of community workers on the work. Community workers hired by the project will be provided with contracts similar to other project staff and workers. The Grievance Redress Mechanism of the project will also be applicable to community workers of the project.

Primary Supply Workers

There is no significant risk of child or forced labour or serious safety issues in relation to primary suppliers. Based on the nature of the project, there will be Primary Suppliers engaged. All contracts with Primary suppliers will follow the mechanisms laid down in the Labour Act (Act 651).

Appendix 18.0 E&S Clauses for Contractors

General Clauses

Clause 1

The contractor shall be responsible for familiarising itself with all national and local legislations relating to activities during the installation of meters phase of the project.

Clause 2

The contractor shall throughout the implementation/construction phase of the project take all reasonable steps to protect the environment on and off the sites so as to avoid damage or nuisance to persons or property of the public or others resulting from pollution or other causes arising as a consequence of his/her methods of operation.

Specific Clauses*Waste Disposal*

Some quantities of waste, both liquid and solid, which are generated as a result of the project works, need to be dealt with adequately to avoid environmental problems, either on or off site. Effective waste disposal at the work sites and construction camp depend on the waste management plan drawn by the Contractor and approved by ECG/NEDCo. Elements of the waste management plan shall include the following:

Clause 1

The Contractor shall at all times maintain all sites under his control in a clean and tidy condition and shall provide appropriate and adequate facilities for the temporary storage of all wastes prior to disposal. For example, adequate and appropriate waste containers for various waste types shall be placed in designated areas designed for the storage such waste prior to disposal.

Clause 2

The Contractor shall be responsible for the safe transportation and disposal of all waste generated as a result of his activities in such a manner as will not give rise to environmental pollution in any form, or hazard to human or animal health. In the event of any third party being employed to dispose of waste, the Contractor shall be considered to have discharged his responsibilities only when he has satisfied himself that the proposed transportation and disposal arrangements are such as will not give rise to pollution or health hazard.

Clause 3

The Contractor shall be responsible for the provision of adequate sanitary facilities for his workforce at all work and ancillary sites. The Contractor shall not allow the discharge of any untreated sanitary waste to groundwater or any surface watercourse. The Contractor shall provide details of sanitary arrangements to ECG/NEDCo for approval. This is to ensure that the proposed facilities are adequate and are unlikely to pollute water resources, if properly operated and maintained.

Transportation of Materials

Potential localised problems can arise along the access roads as a result of transportation of raw materials. The Contractor shall ensure that vehicles transporting materials along the local access roads do not cause a safety hazard, excessive noise, dust or disturbance to any local inhabitants.

Traffic Management during Construction

There are potential negative impacts for existing traffic, parking, access and road safety as the project works take place. These can be mitigated by requiring the Contractor to undertake temporary traffic management measures.

Clause 1

The Contractor shall take responsible precautions to keep all public or private roads clear of any spillage of material from his trucks to the satisfaction of ECG/NEDCo. All such spillages, which occurs, shall be cleared without delay.

Clause 2

The Contractor shall provide, erect and maintain on the site and at such positions on the approaches to the site, traffic signs and traffic control signals necessary for the direction and control of traffic. The signs shall be reflectorised or adequately illuminated by night in a manner approved by the Project Engineer and kept clean and legible at all times. The Contractor shall reposition, cover or remove signs as required during the progress of the works.

Clause 3

The Contractor's operations throughout the contract shall be so conducted as to maintain the flow of existing road traffic.

The Contractor's method of working within the project corridor shall be to the approval of ECG/NEDCo.

Noise and Air Quality

Emissions (including lead, carbon monoxide, carbon dioxide, nitrogen oxides, sulphur oxides, nitrous oxide, and particulate matters (ash, dust) from inadequately maintained vehicular engines can result in an increase in health hazard to the population living along the project corridor.

Clause

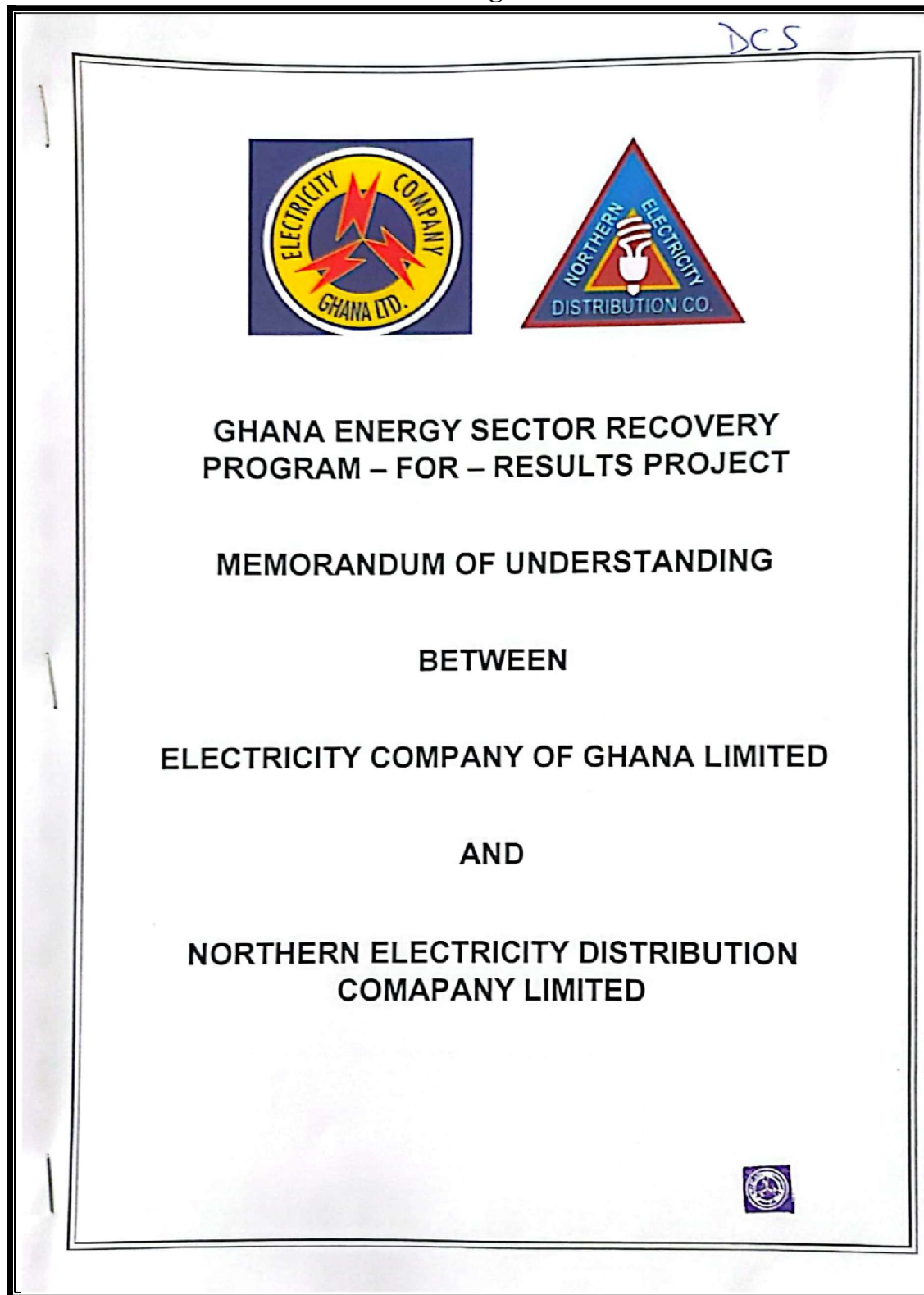
All vehicles and plant operated by the Contractor shall at all times be maintained in accordance with the original manufacturer's specifications and service manuals, with particular regard to the control of noise and particulate emissions. ECG/NEDCo will have the right to require the Contractor to replace or rectify any vehicle, which in its opinion, emits excessive noise or smoke within 24 hours of the Contractor being so notified

Appendix 19 Accredited E-waste Handling/Management Companies in Ghana

Name of Company	Contact
1. Jekora Ventures Ltd	Email: info@jekoraventures.com Tel: 0289673514
2. Zoomlion Ghana Ltd	Email: info@zoomlionghana.com Tel: +233 307 019 199
3. Green Advocacy Ghana	Email: info@greenadghana.com Tel: 0243223864
4. Zeal Environmental Technologies	Email: info@zealenvironmental.com Tel: +233 553753834/ +233 501301277
5. Presank Enterprises	Email: info@presank.com Tel: +233 244775828/+233 243803910
6. Atlantic International Recycling Systems	Email: recyclinginternational@aol.com Tel: 0302 776976
7. J. Stanley Owusu Ltd	Email: vcbs@jso-group.com
8. Electro Recycling Ghana	Tel: 0243776026
9. City Waste	Email: cwmcl@gmx.net Tel: 0244255782
10. Sentuo Resource Ltd.	Email: sentuogroup9@gmail.com Tel: 0244845361

Appendix 22

Memorandum of Understanding between ECG and NEDCo



MEMORANDUM OF UNDERSTANDING

This MEMORANDUM OF UNDERSTANDING ("MOU"), is made and entered into as of the fifteenth day of June, 2022

BETWEEN

Electricity Company of Ghana Limited (ECG), a company incorporated under the laws of Ghana and having its principal place of business at the Electro-Volta House, 28th February Road, Finance Drive, Ministries, Accra and of P. O. Box 521, Accra acting per its Managing Director (hereinafter called "the Employer") of the one part,

AND

Northern Electricity Distribution Company Limited (NEDCo), a company incorporated under the laws of Ghana and having its principal place of business at NORRIP Building, Gumani, off the Tamale - Bolgatanga Road and of P. O. Box TM77 Tamale, Ghana acting per its Managing Director (hereinafter called "the Contractor") of the other part.

PURPOSE AND SCOPE

- A. The purpose of this MOU is to clearly identify the roles and responsibilities of each Party to this MOU as regards the Procurement and Installation of Meters for NEDCo under the Ghana Energy Sector Recovery Program-for-Results (PforR) Project (the "Project") which is being funded by the World Bank.
- B. This MOU sets out the rights and obligations of both parties relative to the smooth implementation of the aforementioned project.

BACKGROUND

- i. WHEREAS it was agreed as a key objective at the World Bank Preparation Mission which took place from April 25 – May 10, 2022 for the Ghana Energy Sector Recovery PforR Project (ESRPforR, P173258), that the beneficiary agencies under the Project shall agree on the implementation arrangements of the Project.
- ii. WHEREAS as part of the implementation structure of this Project, the Electricity Company of Ghana (ECG) has been made an Implementation Unit to execute certain components under the funding.
- iii. WHEREAS the Parties and other key stakeholders have agreed for ECG to undertake Procurement of meters for NEDCo under the Project
- iv. AND WHEREAS NEDCo shall supervise the installation of meters under the project in NEDCo's operational area.



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NOW THEREFORE, pursuant to the Project objectives and in consideration of the mutual covenants and conditions contained herein, the parties agree as follows:

1. The Parties hereby undertake to act in good faith and to enter into and sign this MOU to streamline the roles of both parties for the purpose of meeting the Project objective.
2. The Parties shall collaborate to ensure that all processes leading to a successful implementation of the Project is achieved, particularly, the Parties agree to use their best efforts in cooperating to carry out the intent of this MOU.

TERM

The term of this MOU shall commence effective from the date of signing of the MOU and unless mutually extended by the Parties, it shall expire on the occurrence of the earlier of the following (a) when the project has been successfully completed in accordance with the Project objectives (b) upon the earlier termination of the project either by the funding Agency or failure of either of the Parties to perform its obligations under this MOU.

CONFIDENTIALITY

1. The Parties agree that the existence of the terms of this MOU, all information disclosed and all correspondence exchanged during the negotiation of the Contract is confidential information. Neither Party shall directly or indirectly disclose to a third party any confidential information except as permitted in accordance with the consent of the other party or by the dictates of a regulation or law.
2. Each Party may disclose Confidential Information to its shareholders, affiliates, financing and investment partners, professional advisers, directors, officers or employees but only to the extent required for the purposes of the Project implementation, regulatory approvals, or as may be required by governmental authorities.
3. The obligation of confidentiality contained herein shall continue to bind the Parties for a period of three (3) years after the termination of this MOU notwithstanding the termination of the MOU by whatsoever reason.

OBLIGATIONS/RESPONSIBILITIESECG

ECG shall undertake the following activities;

- i. The Tender Preparation for the procurement and installation of meters and issuance to prospective bidders in line with the World Bank guidelines on procurement
- ii. Evaluation of bids together with counterpart staff from NEDCo
- iii. Contract Award
- iv. Contract Management & Administration
- v. Undertake Factory Acceptance Tests together with counterpart staff from NEDCo on Meters and other equipment to be supplied



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- vi. Act as consignee for the goods and undertake Port Handling and Clearing Charges upon delivery at the port of destination
- vii. Inland transportation of the Meters from port of Tema to designated destination by the Contractor
- viii. Regular Reports on the status of the Project to relevant stakeholders

NEDCo

NEDCo shall undertake the following activities;

- i. Submission of Technical Specifications to ECG for the Preparation of the Tender document
- ii. Collaborate with ECG team for the Evaluation of bids
- iii. Join ECG team for Factory Acceptance Tests on Meters and other equipment to be supplied
- iv. Reimburse to ECG the full cost of Port Handling and Clearing Charges of all materials to be shipped under the contract (See *Appendix 1 for cost breakdown*)
- v. Supervise the installation of all Meters under the contract
- vi. Report to ECG on the status of installation works for onward submission to relevant stakeholders

PAYMENTS

It is mutually understood and agreed by and between the parties that the payment to be made by NEDCo to ECG will follow the terms attached as Appendix I.

MISCELLANEOUS

- 1. This MOU shall not be assigned by either Party without the prior written consent of the other Party.
- 2. Each party warrants to the other party that it shall indemnify and hold harmless the other for any and all claims or losses suffered by the other party due to the negligence or default of the one Party in performing its obligations under this MOU and in connection with procurement transactions.
- 3. This MOU shall not be altered, varied or amended except that it is in writing and signed by both Parties.
- 4. This MOU shall be binding upon and shall inure to the benefit of the parties hereto and their respective representatives, successors and assigns.
- 5. Any notice required to be given under this MOU shall be deemed to have been duly given if sent by registered post or delivered at the last known address of the receiving Party.

GOVERNING LAW AND ARBITRATION

- 1. This MOU shall be governed by and construed in accordance with the Laws of Ghana.
- 2. The Parties shall act in good faith to settle amicably any dispute arising out of or in connection with this MOU including any questions regarding the existence, scope, validity, or termination of this MOU. If a Party believes that there is a dispute, it shall notify the other Party to this effect as soon as is reasonably practicable and it shall provide written details of the dispute to the other Party.



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3. Any dispute arising from this MOU which cannot be amicably settled by the Parties shall be resolved by recourse to the Alternative Dispute Resolution Act, 2010 (Act 798) under the Rules of Arbitration of the Ghana Arbitration Centre (the "GAC") (the "Rules"). There shall be one arbitrator and the appointing authority shall be the GAC. The seat of arbitration shall be Accra, Ghana and all hearings shall be conducted in the English language. The arbitral award shall be final and binding on the Parties.
4. The relationship between the parties shall be that of independent contractors and no master - servant relationship shall exist between the parties or the other's employees.

IN WITNESS WHEREOF, the Parties have caused this MOU to be executed by their respective officers on the day and year first above written.

SIGNED FOR:

ELECTRICITY COMPANY OF
GHANA LIMITED

Samuel D. Mahama
21/06/22
Signature & Date



Name: *Samuel D. Mahama*
Managing Director

NORTHERN ELECTRICITY DISTRIBUTION
COMPANY LIMITED

Osmani Ayub
Signature & Date

Name: *Osmani Ayub*
Managing Director

MANAGING DIRECTOR
Northern Elect. Distribution Co. Ltd
NEDCo - Tamale

In the Presence of:

Signature: *Leonardo Lamptey*
Name: *Leonardo Lamptey*
Designation: *Lawyer*
Date: *21/06/2022*

Signature: *J. Nii Ayi Tawee*
Name: *J. Nii Ayi Tawee*
Designation: *HEAD OF LEGAL*
Date: *15-06-2022*
NEDCo
TAMALE

APPENDIX I

ESTIMATED COST ON THE PROCUREMENT AND INSTALLATION OF METERS FOR NEDCO

The estimated cost to be transferred or reimbursed by NEDCo is based on assumption that World Bank financing will cover the full cost of CIF (materials) and installation.

IMPORT DUTY CHARGES ON METERS

NO	NAME OF THE LEVY	PERCENTAGE	BASE AMOUNT	REMARKS
1	Import Duty	10	on CIF	EXEMPTED
2	Import VAT	12.5	on CIF	EXEMPTED
3	Import NHIL	2.5	on CIF & Import Duty	EXEMPTED
4	GetFund Levy	2.5	on CIF & Import Duty	EXEMPTED
5	Inspection fee	1	on CIF	EXEMPTED
6	Processing fee	1	on CIF	
7	Ecogas Levy	0.5	on CIF	
8	IRS Tax Deposit	1	on CIF	
9	Special Import Levy	2	on CIF	
10	GH EXIM Levy	0.75	on CIF	
11	AU Levy	0.2	on CIF	
12	Network Charge	0.4	On FOB	
13	Network Charge VAT	12.5	on Network charge	
14	Network Charge COVIT-19 Health	1	on Network charge	
15	Network Charge NHIL	2.5	on Network charge	
16	Network Charge Getfund Levy	2.5	on Network charge	
RENTAL CHARGES		Rate as of 26th April 2022		



APPENDIX I

Shipping Line charges	5,300.00	40ft Container	exclusive of taxes
	2,650.00	20ft Container	exclusive of taxes
Terminal Charges	920.00	40ft Container	exclusive of taxes
	460.00	20ft Container	exclusive of taxes

The shipping charges and the terminal charges are quoted in US Dollars and are converted to cedis at the exchange rate provided by CEPS.

The quotation is usually tax exclusive and therefore provisions should be made for all the applicable taxes.

TRANSPORTATION

The haulage charges from Tema Sea Port to Tamale are GHS13,087.00 per 40ft container and GHS10,918.00 per 20feet container. These amounts are tax exclusive.

Haulage Charges	13,087.00	40ft
	10,918.00	20ft

LABOUR COST

The applicable labour cost according to ECG operational standard is 15% of the contract sum. However, for the purposes of this arrangement and for the sake of the relationship we propose 1.5% of the contract sum as labour cost.

MISCELLANEOUS

In case any fee or charges arises different from the cost items listed above, ECG will invoice NEDCo accordingly with the necessary justification.



ENGINEER'S ESTIMATE FOR 6,418 SPLIT SMART PREPAYMENT METERS FOR NON STRATEGIC					
SUPPLY SCHEDULE					
S/N	Description	Unit	Quantity	Unit Price – US\$ (CIP- Tamale)	Total Price
1	METER AND METER ACCESSORIES				587,920.58

S/N	Description	Unit	Quantity	Unit Price – US\$ (CIP- Tamale)	Total Price
	200/10-5A CT cabinet completely assembled with 3-phase and neutral busbar, and prewired with all accessories, and all necessary installation accessories for pole mounting. The Circuit Breaker for the panels should be designed to match CT rating.				
	230/415V, 50Hz, pre-programmed 10-5A Secondary Rated CT Circuit				

S/N	Description	Unit	Quantity	Unit Price – US\$ (CIP- Tamale)	Total Price
3.16	PVC coated stainless steel cable tile (4.6x300mm)	No.	19,245	0.70	13,471.50
3.17	PVC coated stainless steel cable tile (9x940mm)	No.	12,830	0.70	8,981.00
3.18	Worn pin (coach screw) insulator	No.	6,415	0.90	5,773.50
3.19	Parallel groove (PG) clamps with double bolt for connection of service lines (120-50sqmm/25sqmm)	No.	15,220	0.90	13,698.00
3.2	Parallel groove (PG) clamps (bimetallic) with double bolt for connection of service lines (70-35sqmm Cu/25sqmm Al	No.	2,000	1.10	2,200.00
3.21	Bimetallic cable lug for 4x95sq Al conductor for connecting cable in and out of CT meter cabinet	No.	16	3.50	56.00
3.22	Parallel groove (PG) clamps (bimetallic) with double bolt for connecting 4x95Al to existing customer line (70-35sqmm Cu/95sqmm Al	No.	16	1.10	17.60
3.23	Tower Clip for holding 2x25 Al service cable (Polyethylene plastic and concrete nail)	No.	128,300	0.06	7,698.00
3.24	9m Wood Pole (Class 4) for replacement of rotten poles or injection	No.	1,283	260.00	333,580.00
3.25	Perforated galvanized iron rails with bolt, nut and all necessary accessories for mounting meters on poles	Set	6,415	30.00	192,450.00
3.26	16sqmm copper cable and accessories for rewiring of 2000 selected customer premises	Mtr	240,000	0.55	132,000.00
4	INSTALLATION SCHEDULE				
4.10	Preinstallation survey	No.	6,418	1.00	6,418.00
4.11	Installation of Single Phase Split Meter with Meter Box on pole complete with all accessories	No.	5,220	8.00	41,760.00
4.12	Installation of Three Phase Split Meter with Meter Box on pole complete with all accessories	No.	1,193	10.00	11,930.00
4.13	Installation of CT Split Meter with Meter Box on pole complete with all accessories	No.	5	13.00	65.00
4.14	Uninstall existing single phase meter with service line and return to NEDCo designated Office in the Area	No.	5,220	7.00	36,540.00
4.15	Uninstall existing three phase meter and return to NEDCo designated Office in the Area	No.	1,193	8.00	9,544.00



		Unit	Quantity	Unit Price US\$ (CIP- Tamale)	Total Price
4.16	Uninstall existing CT or AMR meter and return to NEDCo designated Office in the Area	No.	5	11.00	55.00
4.17	Replacement of rotten pole (Uninstall existing pole and install new pole)	No.	642	11.00	7,056.50
4.18	New pole installation	No.	642	7.00	4,490.50
4.19	Rewiring of customer premises	No.	2,000	12.00	24,000.00
4.2	Stakeholder engagement	Lot	1	40,000.00	40,000.00
5	Automatic Meter Test Bench, Spare Parts, Installation / Training				517,620.81
	Automatic Meter Test Bench				433,579.44
5.1	Automatic Meter Test Bench for 20 meter positions complete with: Rack for integration of all component systems, 3-phase electronic power source, 3-phase reference standard class 0.02%, Scanning devices, Error display units, cable set for voltage, current and communication for 20 meter positions, Isolated current transformer, Tariff device communication module for 20 meters, 6-circuit relay control system and 3-phase quick connection device for voltage and current	No.	1	221,970.00	221,970.00
	Automatic Meter Test Bench for 20 meter positions complete with: Rack for integration of all component systems, 1-phase electronic power source, 1-phase reference standard class 0.02%, Scanning devices, Error display units, cable set for voltage, current and communication for 20 meter positions, Isolated current transformer, Tariff device communication module for 20 meters, 6-circuit relay control system and 1-phase quick connection device for voltage and current	No.	1	102,900.00	102,900.00
	Hand-held input terminal capable of reading bar-code and manual entries of data which shall be transferable to the meter testing software	No.	2	3,023.79	6,047.58
	High precision class 0.01% comparator complete with all accessories for calibrating reference standard	Lot	2	27,075.93	54,151.86
	Test Bench Operating Software	Lot	1	4,410.00	4,410.00
	Server along with Management Reporting Software	No.	1	44,100.00	44,100.00
	Mandatory Spares for Meter Test Bench				39,941.37
	Voltage Amplifier	No.	1	12,070.17	12,070.17



S/N	Description	Unit	Quantity	Unit Price – US\$ (CIP- Tamale)	Total Price
5.2	Current Amplifier	No.	1	12,495.00	12,495.00
	Reference Standard	No.	1	14,406.00	14,406.00
	Scanning Heads	No.	1	427.77	427.77
	Error Indication Device	No.	1	295.47	295.47
	Set of Voltage Connection Cable (Red, Yellow, Blue and Black)	No.	8	30.87	246.96
5.3	Related Services for Supply of Meter Test Benches				44,100.00
	On site Supervision, assembly, installation, testing and commissioning of the meter test bench	Lot	2	1,470.00	2,940.00
	Training of designated Purchaser's technical and end-user personnel to enable them to effectively operate and maintain the total system. The training schedule will be agreed to by both parties during the performance of the Contract. Location for the training shall be at the purchaser's premises	Lot	1	4,410.00	4,410.00
	Training of up to four (8) selected technical staff on offered meter test bench at the Suppliers Premises.	Lot	2	14,700.00	29,400.00
	Annual maintenance including necessary repairs works for three (3) years after warranty period	Lot	1	7,350.00	7,350.00
GRAND TOTAL					2,185,039.64

