

**ADDEMDUM TO THE ENVIRONMENTAL AND
SOCIAL MANAGEMENT PLAN FOR THE PROPOSED
GAMBIA ELECTRICITY SUPPORT PROJECT FOR
NAWEC**

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TABLE OF CONTENTS

ABBREVIATIONS AND ACRONYMS	3
1. INTRODUCTION AND BACKGROUND	4
2. METHODOLOGY	4
3. PROJECT SCOPE CHANGE DESCRIPTION	5
4. THE ENVIRONMENTAL BASELINE CONDITIONS	5
5. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK	5
6. OUTCOME OF CONSULTATIONS AND FIELD VISITS	6
7. ASSESSMENT OF POTENTIAL IMPACTS AND MITIGATION MEASURES	7
7.1. Evaluation of Environmental and Social Impacts.....	7
7.2. Description of significant environmental and social impacts changes with corresponding mitigation measures	8
7.2.1. Changes in potential positive impacts.....	8
7.2.2. Changes in Potential Negative Impacts.....	9
7.2.2.1. Change in negative Impacts on the Physical Environment and proposed mitigation ..	9
8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN	11
9. ESMP IMPLEMENTATION ARRANGEMENTS	12
10. ENVIRONMENTAL COMPLIANCE MONITORING	12
11. CONCLUSIONS AND RECOMMENDATIONS	12
11.1. Conclusions	12
11.2. Recommendations	12
12. BIBLIOGRAPHY	14
13. ANNEX 1.....	14

ABBREVIATIONS AND ACRONYMS

DPPH Department of Physical Planning and Housing
EIA Environmental Impact Assessment
ESIA Environmental and Social Impact Assessment
ESMP Environmental and Social Management Plan
GBA Great Banjul Area
GEAP Gambia Environment Action Plan
GEF Global Environment Facility
HFO Heavy Fuel Oil
IFMIS Integrated Financial Management Information System
MOE Ministry of Energy
MOFEA Ministry of Finance and Economic Affairs
NAWEC National Water and Electricity Company
NEA National Environment Agency
NEMA National Environment Management Act
NEMC National Environment Management Council
ODS Ozone Depleting Substances
PAGE Programme for Accelerated Growth and Employment
PCBs Polychlorinated Biphenyls
PIC Prior Informed Consent
PIU Project Implementation Unit
POPs Persistent Organic Pollutants
PURA Public Utilities Regulatory Authority
SEO Senior Environmental Officer
T&D Transmission and Distribution
TOR Terms of Reference
UNEP United Nations Environment Facility
VDC Village Development Committee
WB World Bank

1. INTRODUCTION AND BACKGROUND

In 2014 and 2015, following the recommendation of the World Bank (WB) supported Energy Strategy Study for The Gambia, the Government of The Gambia (GoTG) carried out activities to prepare the Gambia Electricity Support Project (GESP). This project aims to help the National Water and Electricity Company (NAWEC) to address the problems of low generation capacity and losses in distribution through maintenance and rehabilitation of existing generators, and replacement of inefficient transmission and distribution infrastructure alongside metering.

In July 2015, the GoTG prepared the Environmental and Social Management Plan in order to evaluate the potential impacts of the GESP during the works and operation phases.

During the second semester of 2015, the project preparation suffered delays in the approval, so when the GESP preparation has been retaken in 2016, two activities included in the original scope have been modified:

- Instead of rehabilitating the Group 8 in Kotu power plant, NAWEC proposes the purchasing and installation of new second-hand group to replace the existing Group 8.
- Given the urgency of reinforcing the power generation in The Gambia, the major overhaul of Group 9 in Kotu power plant was undertaken by NAWEC through its own resources. Hence, resources originally allocated to that activity are now available and NAWEC proposes to purchase and install an additional second-hand group in Brikama power plant where there is an existing available slot.

The present addendum intends to assess the potential impacts of these scope changes during the works and operation phases, to ensure that negative impacts are mitigated while the positive ones are enhanced for sustainability.

The objectives of this addendum to the Environmental and Social Management Plan are:

- To identify, assess and manage potential negative environmental impacts associated with the new included activities, and ensure that appropriate mitigating measures are spelt out.
- To establish clear procedures and methods for environmental and social planning, review and implementation in the aim of complying with environmental legislation.
- To specify appropriate roles and responsibilities, and outline the necessary reporting procedures, for managing and monitoring environmental and social concerns related to the Project activities.

2. METHODOLOGY

The addendum uses the activities and findings obtained by the consultants during the development of the original ESMP. The approach was described in section 1.3 of the ESMP. Considering the similar nature and identical location of the new activities that replace the original ones, (Kotu and Brikama power plants) it has not been considered necessary to undertake additional field investigations.

3. PROJECT SCOPE CHANGE DESCRIPTION

The GESP development objective is to increase the availability and reliability of electricity supply for existing customers in the Great Banjul Area (GBA).

The changes have been included in the subcomponent 1.1 and are explained in the table below:

Initial scope of component 1.1	Proposed new scope for component 1.1
<i>Rehabilitation of the Kotu thermal power plant.</i> The GESP will finance the rehabilitation and maintenance of one 6.4 MW engine (group 8 - G8), and provide the necessary material for a major overhaul (24,000 hours overhaul) of another 6.4 MW engine (group 9 - G9).	<i>HFO engines at Kotu and Brikama:</i> The sub-component would finance two second hand engines (2 * 6.4 MW) to replace the existing Kotu G8 engine (6.4 MW) that is out of service and another similar one to be installed at existing facilities at Brikama G7 where there is an existing slot available.
In addition, it will finance electrical equipment, and rehabilitate and replace a number of damaged equipment that are critical for restoring the functionality, providing operation reliability and improving the power plant efficiency	These activities will remain unchanged in the project under component 1.3

The rest of the investment components remain unchanged, both in generation, and in transmission and distribution. Therefore, the changes are focused in the engines in Kotu and Brikama to provide reinforcement in power generation in the GBA. All activities will still be implemented in these two power plants.

Considering the chapter 2.2 on the original ESMP, where the Main Project Components and Locations were described, the changes are in the Electricity Generation (section 2.2.1):

Old scope description	New scope description
Rehabilitation and maintenance of electricity generator, G8, at Kotu	Procurement and installation of a second-hand engine to replace the G8 at Kotu
Major overhaul of electricity generator, G9, at Kotu	Procurement and installation of a second-hand engine to be installed as G7 at Brikama

4. THE ENVIRONMENTAL BASELINE CONDITIONS

The environmental baseline conditions remain as describe in the original ESMP in chapter 3.

5. POLICY, LEGAL AND INSTITUTIONAL FRAMEWORK

The policy, legal and institutional framework remains as describe in the original ESMP in chapter 4.

6. OUTCOME OF CONSULTATIONS AND FIELD VISITS

The outcome of consultations and field visits remain as describe in the original ESMP in chapter 5.

As indicated before, the nature of the activities is similar (installation of engines) and the locations of the activities are the same (Kotu and Brikama power plants). Hence, it has been considered that there is no need of additional consultations and field visits to develop this addendum.

7. ASSESSMENT OF POTENTIAL IMPACTS AND MITIGATION MEASURES

7.1. Evaluation of Environmental and Social Impacts

The shadowed cells indicate the areas where potential impact changes are likely due to the scope modification compared to the original assessment (pages 38 and 39 of the project ESMP). Where the impact's significance has changed, the old value is in brackets. For the most part the potential additional impacts are small and presented in section 7.2.1 along with appropriate mitigation measures. There are no impact changes to T&D activities, given the modifications are only in Generation activities.

PARAMETERS		POTENTIAL IMPACTS	POTENTIAL IMPACT SIGNIFICANCE ON SPECIFIC PROJECT PHASES AND COMPONENTS			
			DURING GENERATORS WORKS	DURING GENERATORS OPERATION	DURING T&D WORKS	DURING T&D OPERATION
Physical	Surface Water	Pollution from oil spills	0	-2	0	0
	Ground Water	Pollution from oil spills	0	-1	-1	0
	Air Quality/Climate	Dust and particulate matter emissions	-1	-2	-1	0
	Geology & Soils	Localized erosion; destruction of natural resources from illegal mining	0	0	-1	0
	Noise & Vibration	Increased noise pollution from engines and lines	-1	-2	-1	-1
	Landscape and Aesthetics	Waste and excess materials left on site; haphazard connection of lines	0	-1	-1	-1
Biological	Fisheries & Aquatic Ecosystem	Loss of aquatic live from oil spills	0	-2	0	0
	Terrestrial Ecosystem (Birds, Wildlife etc.)	No significant potential impact	0	0	0	0
	Agriculture & Livestock	Agricultural land contaminated from oil spill	0	-1	0	0
	Forest & Vegetation	No significant potential impact	0	0	0	0
Socioeconomic	Public Health and Safety	Accidents; poor waste management; dust and increased noise nuisance	0	0	-2	-1
	Occupational Health and Safety	Risk of poor health from particle inhalation; excessive noise; falls; fires and heavy loads etc.	-2	-2	-2	-1
	Land Ownership / land use	No significant potential impact from displacement or relocation	0	0	-1	0
	Community Development	Development of infrastructure	0	+2	0	+2
	Employment & Income Generation	Employment on Project related works	+2	+2	+2	+2
	Communication / Transportation	Traffic disruption; improved telecommunication	0	+2	-1	+2
	Economy	Improved economy directly and secondarily	+1 (0)	+2	0	+2
	Energy	More reliable and quantity of power supply for socio-economic development	0	+2	0	+2
	Gender	Increased income of women from petty trading and employment on the Project	+2	+2	0	0
	Education	Improved education for next generations	0	+2	0	+2
Community Stability / Vulnerable	Conflict resulting from choice of	0	0	0	-1	

PARAMETERS	POTENTIAL IMPACTS	POTENTIAL IMPACT SIGNIFICANCE ON SPECIFIC PROJECT PHASES AND COMPONENTS			
		DURING GENERATORS WORKS	DURING GENERATORS OPERATION	DURING T&D WORKS	DURING T&D OPERATION
groups	electricity distribution routes				
Culture / Tourism /Archaeology	More reliable energy for tourism activities; beach pollution from spills	0	-1/+2	0	+2

Evaluation key for the matrix:

-2 High Negative Impact +1 Low Positive Impact
-1 Low Negative Impact +2 High Positive Impact
0 No Significant Impact

7.2. Description of significant environmental and social impacts changes with corresponding mitigation measures

This section describes the environmental and social impacts due exclusively to the activities affected by the project scope changes.

7.2.1. Changes in potential positive impacts

The Project scope changes will enhance the positive impact due to energy generation. The addition of a new second-hand engine in Brikama will increase the energy generation and availability in the GBA. This will have positive impact as energy is the basis for all development. Residents and businesses will increase once there is efficient electricity supply. It will encourage investment in fisheries and agriculture including horticulture and husbandry, for activities such as irrigation, value addition and cold storage. Investors in other sectors such as manufacturing, health, tourism, and education will have an added benefit of locating their businesses within the project area to save on personal electricity generation which is expensive and not sustainable.

Moreover, the replacement of Group 8 in Kotu and the installation of a new additional engine in Brikama will also reinforce the creation of employment, as more labor force will be needed for these activities that for the rehabilitation included in the former scope. Employment will be created for construction of foundations, installation works and maintenance of generators during operation. Indirectly, employment will be generated where new business move to these areas due to reliable electricity supply. Income generation from petty trading of food by women to workers will also be realized. NAWEC is therefore, urged to use unskilled labor from the specific Project sites and women, where and when appropriate. Likewise other sectors, education will be equally

enhanced as students can work under safe lighting, use computers and other equipment such as laboratory equipment. Education offices can also work effectively with better supply of electricity.

7.2.2. Changes in Potential Negative Impacts

7.2.2.1. Change in negative Impacts on the Physical Environment and proposed mitigation

Negative Impacts on Air Quality

During the installation of the new second-hand engines there will be higher release of fumes and aerosol from activities such as welding and painting of parts. These will be minimized as the proposal is to get good shape second-hand engines, refurbished with brand new spare parts if needed. During operation, given there will be an additional engine in Brikama (Group 7) the emissions, such as particulate matter, will be higher and will be released especially when generators have just been started. Cleaning, excavation and transportation of earth materials may produce dust in Brikama and Kotu power plants, however these will be limited to the inside of the power plants. These effects will be short term in nature and confined to the sites.

Mitigation

Activities causing air pollution must be carried out in the open to avoid accumulation and encourage ease of dispersion. The new engines parts and regular maintenance shall contribute in ensuring emissions from the engines are within reasonable standards. Those engines will be selected competitively with proper technical specifications, including reduced emissions. NEA shall monitor ambient air quality.

Negative Impacts from Excessive Noise Nuisance

Substantial noise pollution is expected from running of these heavy duty engines. The impact will be slightly higher with the scope change due to the addition of a new engine in Brikama. However, as all engines are housed centrally within NAWEC premises, the nuisance is localized, though of long term duration.

Mitigation

Generators in the existing stations at Kotu and Brikama are presently being operated with limited nuisance being felt from the offices within the power station. Control towers are well enclosed and the sound insulated, therefore, where new unrelated activities are planned, these must be away from the generators. Appropriate noise reduction means must be included with regular maintenance for proper operations.

Negative Impacts on Landscape and Aesthetics

There will be no landscape impact from generators as they already exist in buildings located within the stations. The new engine in Brikama will be installed inside the existing building in the power plant.

Mitigation

All excess materials and waste produced in the process must be collected and the land returned to its original state.

Negative Impacts on Occupational Health and Safety

There is high risk of health and safety to workers during all phases of the project. While the replacement of Group 8 in Kotu will not affect this risk (there is already one engine in place), the installation of a new engine in Brikama will reinforce this risk.

Hazards include fumes, fire, working at heights, working with heavy equipment and parts, excessive noise and slippery surfaces amongst others. All NAWEC staff and those to be employed by contractors for the project must be informed of the associated risks and hazards. Use of personal protective equipment and reporting of accidents is essential for the review and improvement of safety guidelines. Training on the job for safe operations is also important in safety management. NAWEC, through the Senior Environmental Officer, Fire Safety Officer and Health and Safety Officer shall ensure a safe work environment such as cleaning slippery oily surfaces, provisions of first aid kits and how to use them. Access around, and within power plants must be improved for ease of movement in emergencies. NAWEC must also plan and limit construction and other items around generators and substations. Fire protection and fighting equipment, which are available for use in case of emergencies, must be maintained.

8. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

The Plan included in the original ESMP remains fully valid. Furthermore, the modified activities included in the project scope will require additional activities as included in the Table below. These activities will be added to the original ESMP.

Activity	Potential Negative Impacts	Mitigation Measures	Responsibility for mitigation	Responsibility for monitoring	Timeframe	Budget
Dismantling of existing G8 in Kotu	Accidents for heavy parts movements	<ul style="list-style-type: none"> • Use of skilled workers • Training • Works organization 	Contractor	NAWEC	Dismantling activities	Included in the contract
Transport of engines	Accidents from movement of heavy machines and parts	Use only road worthy vehicles and experienced drivers	Contractor	NAWEC	Upon arrival of engines	Included in the contract
	Traffic disruption by slow moving vehicles.	Avoid rush hours and busy routes for safer and freer traffic flow.	Contractor	NAWEC	Upon arrival of engines	Included in the contract
Construction of new foundations in Brikama	Soil pollution	<ul style="list-style-type: none"> • Workers training for appropriate deployment • Use of authorized disposal sites 	Contractor	NAWEC	Civil works	Included in the contract
Installation of new G8 in Kotu and G7 in Brikama	Accidents for heavy parts movements	<ul style="list-style-type: none"> • Use of skilled workers • Training • Works organization 	Contractor	NAWEC	Installation activities	Included in the contract

9. ESMP IMPLEMENTATION ARRANGEMENTS

The ESMP implementation arrangements remain as describe in the original ESMP in chapter 8.

10. ENVIRONMENTAL COMPLIANCE MONITORING

The environmental compliance monitoring remains as describe in the original ESMP in chapter 9.

11. CONCLUSIONS AND RECOMMENDATIONS

11.1. Conclusions

Consultations analysis indicates that NAWEC gives high importance to the Project in order to prevent unnecessary losses, contribute to meeting electricity demand and improvement of infrastructure for safe running and maintenance. Beneficiaries have also emphasized their need for the Project and appeal for quick implementation.

The study has further identified the likely positive and negative environmental and social impacts of the Project with most significant adverse impacts related to effects of potential hydrocarbon spill, and health and safety of workers. The changes in the scope will reinforce the positive impacts although will also increase the negative. Nevertheless, the balance between these two opposite impact changes are estimated as positive.

Reasonable mitigation measures, that can be easily applied, have been identified to address the major impacts and others with relatively low significance to avoid cumulative effects. Most of the Project sites and facilities are existing, thus, there will be no change in land use, no activity out of scale or nature with its surrounding. Therefore, it is concluded that the proposed NAWEC Electricity Project can be executed in an environmentally sound manner on full implementation of the ESMP.

11.2. Recommendations

The recommendations remain very similar to the ones in the original ESMP, with two changes that are highlighted here below:

- Policy and decision makers from all relevant institutions must be sensitized on the Project ESMP before the Project activities commence to ensure their roles are understood and concerns have been addressed.
- Irrespective of the proposed workshop, training and sensitization must be continuously integrated in the daily activities of the Project.

- **A formal Steering Committee comprising MoE, MoFEA, NAWEC, NEA and PURA is proposed whilst NAWEC serves as the implementing agency with a PIU formed¹.**
- NAWEC monitoring and evaluation officers and the Senior Environment Officer must be clearly assigned the responsibility of ESMP monitoring as there is a tendency to keep focus on technical work progress alone.
- The cost of ESMP implementation must be incorporated in the main Project budget to ensure availability of resources when needed.
- NAWEC to sign a Memorandum of Understanding with NEA in ensuring full ESMP implementation and compliance.
- The Health and Safety Officer at NAWEC needs training on safety at work.
- It is important that all contracts must include clauses on responsibility for environmental and social protection including implementation of ESMP applicable to contractors and their workers.
- Suppliers of earth materials such as sand and gravel must be certified by the NEA and Geological Department to mine, and only Government approved quarries shall be used.
- Recruitment for this Project during all phases must give priority to qualified women considering the high percentage of men already expected to participate.
- An independent environmental audit shall be carried out mid-term of Project implementation.
- The NEA must aim to finalize and adopt the Waste Bill, 2007, to cover specific requirements for waste management of all types including sludge oil.
- To develop standards to guide location of poles within communities and open land.
- **Suppliers of second-hand engine and spare parts should provide technical support in installing parts from their company².**
- **Review the current practice of collecting, storing, transporting, recycling or converting the sludge and other wastes generated at the Kotu and Brikama Power Station with a view to making the practice more environmentally friendly³.**
- Develop the relevant policies and laws to regulate the industry in line with the country's international obligations.
- Develop a sector-wide internal environmental policy for NAWEC whose implementation will be the responsibility of the in-house Senior Environmental Officer.
- The NEA needs to call NEMC meetings regularly to give update on the current developments and challenges; to give the NEA focus and direction and the necessary political support to enhance the environment.

¹ NEA has been included as a member of the GESp Steering Committee.

² The need of technical support is extended to the selected second-hand engine supplier.

³ The review is extended also to Brikama power plant.

12. BIBLIOGRAPHY

The bibliography remains as describe in the original ESMP in chapter 11.

13. ANNEX 1

Original ESMP