NATIONAL ENERGY EFFICIENCY STRATEGY

THE GAMBIA

May 2022

ABBREVIATIONS

ACS	Advanced cookstoves
ASCEG	Alliance for Sustainable Cooking Energy in The Gambia
BAU	Business as usual
BCC	Behavior Change Communication
CFL	Compact fluorescent lamp
DCD	Department of Community Development
DSM	Demand-side management
ECOWAS	Economic Community of West African States
EE	Energy efficiency
EEBC	Energy efficiency building code
GAEE	Proposed Gambian Agency for Energy Efficiency
GBA	Greater Banjul Area
GBOS	Gambia Bureau of Statistics
GDP	Gross domestic product
GEF	Global Environmental Facility
GHG	Greenhouse gas
GoTG	Government of The Gambia
GREC	Gambia Renewable Energy Center
HFO	Heavy fuel oil
HPL	High performance lamp
HSP	High-pressure sodium
INC	Incandescent (lamp)
IPMVP	International Performance Measurement and Verification Protocol
LCOE	Levelized cost of electricity
LED	Light-emitting diode
LPG	Liquefied petroleum gas
M&E	Monitoring and evaluation
M&V	Measurement and verification
MEPS	Minimum energy performance standards
MoFEA	Ministry of Finance and Economic Affairs
MoPE	Ministry of Petroleum and Energy
MoTWI	Ministry of Transport, Works, and Infrastructure
MRV	Monitoring, reporting, and verification
MV&E	Measurement, verification, and enforcement

NAWEC	National Water and Energy Company
NEEAP	National Energy Efficiency Action Plan
NEES	National Energy Efficiency Strategy
NGO	Non-government organization
NPBFP	National Public Buildings and Facilities Policy
NPV	Net Present Value
OTTV	Overall thermal transfer value
PURA	Public Utilities Regulatory Authority
PV	Photovoltaic
RAC	Room air conditioner
REAGAM	Renewable Energy Association of The Gambia
S&L	Standards and labelling
SDG	Sustainable Development Goal
SHS	Solar home system
TGSB	The Gambia Standards Bureau
VSD	Variable speed drive
WBG	World Bank Group

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACKNOWLEDGMENTS

The preparation of this National Energy Efficiency Strategy (NEES) for The Gambia was supported by the Director of Energy of the Ministry of Petroleum and Energy (MoPE), Kemo Ceesay and managed by Lamin Marong from MoPE in collaboration with Bafoday Sanyang and Peter Mendy. A Steering Committee for Energy Efficiency was created and provided oversight in the review and finalization of the report. The Steering Committee includes participation from the MoPE, the Ministry of Finance and Economic Affairs (MoFEA), Ministry of Environment Climate Change and Natural Resources (MECCNR), the Ministry of Gender, Children and Social Welfare (MGCSW), the Public Utilities Regulatory Authority (PURA), the National Water and Electricity Company (NAWEC), the Gambia Chamber of Commerce and Industry (GCCI), and The Association of Non-Governmental Organizations (TANGO).

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EXECUTIVE SUMMARY

Energy Efficiency in The Gambia: Benefits and Opportunities

In recent years, The Gambia has been plagued with electricity shortfalls due to growing electricity demand and a lack of investment in operations, maintenance, and new generation. With support from the WBG, electricity supplies are stabilizing, and investments are expected to lead to a greater share of renewable energy and universal access to electricity by 2030.

Scaling up EE is central to The Gambia's ambitions to provide affordable, reliable, and clean electricity for all. It has many benefits from reducing electricity bills and improving health to reducing CO_2 emissions and expanding access.

Aware of the importance of energy efficiency (EE) as a pillar to facilitate universal electricity access, fight against energy poverty, and enhance economic and social benefits, the World Bank Group (WBG) is supporting the Government of The Gambia (GoTG), through the Ministry of Petroleum and Energy (MoPE) and other key stakeholders, to develop The Gambia's first National Energy Efficiency Strategy (NEES) by focusing on the **electricity demand side**.

Energy Efficiency Strategy Target

Based on potential energy saving analysis using top-down as well as bottom-up approaches, the total energy savings target was fixed, to 108 GWh by 2030 and 416 GWh by 2040. The residential sector offers the highest share of savings with around two-thirds of the EE potential, followed by the industrial sector (23%) and then commercial buildings (13%).

This target represents a reduction of projected electricity demand by around 11% by 2030 and 25% by 2040 compared to the BAU scenario, defined as if The Gambia energy consumption continue to grow based on the observed trend.

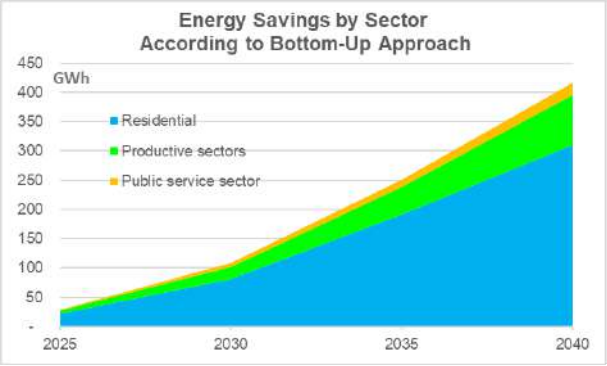

Figure 1: Energy Savings Potential by Sector

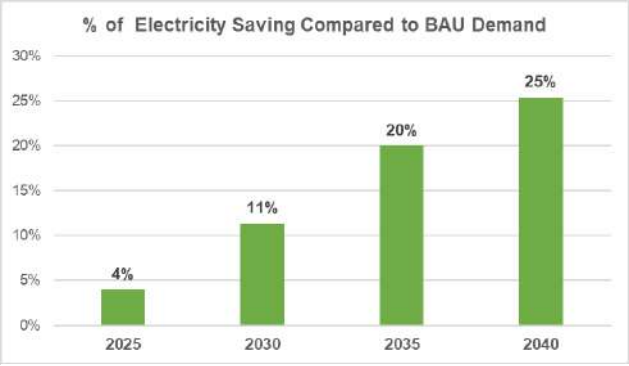

Figure 2: Electricity Demand Reduction Compared to BAU Scenario

EE Sectoral Program

To achieve these objectives, sectoral EE programs are proposed. They include 14 EE measures as following:

- 5 EE measures in the residential sector
- 6 EE measures in the productive sector
- 3 EE measures in the public services

The recommended EE measures have been subject to a process of consultation and validation with various key stakeholders to ensure ownership of the proposed EE measures by the main targeted sectors and players and thereby facilitate the effective implementation of the NEES.

These detailed EE sectorial programs are presented in the following table including the cooking sector (3 EE measures):

Residential Sector: Lighting, Appliances, and Equipment

Table 1: Measures and Actions for the residential sector

Subsector	N	Measure	Actions	Priority
Lighting	1	Phase out inefficient lighting products and adopt MEPS for on-grid and off-grid lighting devices	› Design, develop, and implement a phase-out program for inefficient lighting devices › Design and implement MEPS for lighting devices	High
	2	Design and put in place a financial and supportive mechanism to replace inefficient lamps by LED bulbs in existing households	Develop and implement financial and supportive mechanisms to replace inefficient lighting	High
Refrigerators and RACs	3	Introduce MEPS and mandatory labelling for refrigerators and RACs	Design and implement MEPS and labelling for cooling appliances imported, assembled, and sold in the country, including MV&E and taking into consideration regional development	High
	4	Mechanism to accelerate the replacement of old inefficient refrigerators	Develop and implement financial and supportive mechanisms to replace inefficient cooling appliances	Medium
Appliances and Equipment	5	Introduce labelling and MEPS for other electrical appliances	Design and implement MEPS and labelling for other household appliances imported, assembled, and sold in the country, including MV&E and taking into consideration regional development	High

Productive Sector: Industry, hotels, and commercial buildings

Table 2: Measures and Actions for the productive sector

N	Measure	Actions	Priority
1	Introduce mandatory energy audits for large energy consumers	› Encourage and incentivize large energy consumers to conduct periodic energy audits and reporting › Provide technical support and training on conducting energy audits to energy auditors and energy managers	High

N	Measure	Actions	Priority
		› Optimize the electric consumption of motors, air compressors, industrial refrigerators, air-conditioners, and lighting › Optimize the power factor and subscribed power	
2	Introduce voluntary adherence to energy management protocols targeting large energy consumers, ISO 50001	› Negotiate and sign voluntary agreements with large energy consumers to progressively introduce energy management systems that comply with ISO 50001 › Provide technical support and training on conducting energy audits to energy auditors and energy managers › Design an incentive and financial mechanism to support the implementation of EE measures and investments	Medium
3	Establish a program to improve EE in MSMEs	› Design an incentive and financial mechanism to support the implementation of EE measures and investments › Provide technical support and training to energy auditors and energy managers on conducting energy audits in the different targeted sectors and on implementing EE measures › Provide technical and incentive support to promote generic EE measures for micro, small/medium enterprises › Enact regulation imposing MEPS for industrial energy using equipment, including MV&E › Enact regulation to introduce minimum energy requirements for new buildings, including public buildings	High
4	Introduce MEPS for industrial energy using equipment	› Enact regulation imposing minimum energy efficiency performance for industrial energy using equipment, including MV&E	Medium
5	Introduce a mandatory EE building code for new buildings	› Design an incentive and financial mechanism to support the implementation of EE measures and investments › Enact regulation to introduce minimum energy requirements for new buildings › Introduce a certification scheme for new buildings in addition to the EE building codes linked to an incentive mechanism for developers to improve EE in new buildings beyond the minimum requirements › Optimize the consumption of air-conditioning and lighting devices › Establish an energy management system by setting up an energy metering system	Medium
6	Complementary policies to support EE in the productive sector (ESCOs)	› Introduce a certification scheme for new buildings in addition to the EE Building Codes linked to an incentive mechanism for developers to improve EE in new buildings beyond the minimum requirements	Medium

Public Services

Table 3: Measures and Actions for the public service sector

Subsector	N	Measure	Actions	Priority
Office buildings, hospitals, and schools	1	Establish a national pilot program to improve EE in public buildings	› Design a dedicated EE program targeting public buildings, including office buildings, hospitals, and schools › Design and implement an innovative mechanism to deploy EE measures in the public sector › Introduce minimum EE requirements in public procurement › Under the EEBC targeting new buildings, introduce a high level of EE requirements for new public buildings	High
Water	2	Establish a program to improve EE in the	› Replace old pumps with more efficient units › Optimize the sizing of pump sets according to station needs	High

Subsector	N	Measure	Actions	Priority
		use of electricity in the water sector	› Install variable speed drives Establish centralized energy management systems at NAWEC headquarters and at station level to enable rigorous monitoring of station consumption indicators and verification of savings	
Streetlighting	3	Establish a dedicated program for the deployment of EE streetlighting	› Replace existing SHP and HPL lighting lamps with LED lamps › Use high-efficiency luminaries › Install streetlighting voltage regulators	High

Cooking Sector

Table 4: Measures and Actions for the cooking sector

N	Measure	Actions	Priority
1	Develop standards and labelling for cookstoves to guarantee quality in the long term	› Conduct an in-depth assessment of the cooking sector across the country › Develop standards and labelling for cookstoves to guarantee quality in the long term › Establish market surveillance › Develop a monitoring and evaluation framework	High
2	Ensure the continued monitoring of cookstove producers to enhance quality	› Hire a firm to provide technical support for design and implement an M&V framework › Design a dedicated M&V framework to ensure compliance with standards and verify the market penetration of efficient technologies › Engage key stakeholders in the development of the M&V framework	Medium
3	Facilitate the market penetration of efficient cookstoves and alternative fuel use	› Increase efforts of the RE Fund and employ a more proactive approach to reach stakeholders and inform them on the availability of the Fund › Make GREC operational for a more effective response in interventions/implementation of RE arrangements › Support and promote quality briquette production through incentives and technical support › Engage with the UNIDO/GEF6 Clean Cookstove beneficiary for the production of their planned distribution of cookstoves to schools and hospitals › Collaborate with PURA together with the Ministry of Gender, Children and Social Welfare and its ancillary departments and relevant women's groups to engage in a medium to long-term program on promoting the use of EE in everyday household products › Create a financing mechanism to subsidize the cost of testing various clean cookstoves with substantial improvement and impact on the health and livelihoods of womenfolk in communities across the country	High

EE program cost and funding

EE program cost

Over the period 2022-2040, the total investment cost of the proposed EE program is estimated at **approximately 96 million dollars (2021 value)**, which would represent around 5% of the country's 2020 GDP. As shown by the following table, the residential sector represents the largest share (around 57%) followed by the productive sector and then the public services sector.

Table 5: Cost of proposed EE programs in the energy sectors

Sectors	2022-2025	2026-2030	2031-2035	2036-2040	Total 2022-2040
Residential sector (million US$)	3,800	10,007	17,219	24,067	**55,092**
Productive sector million US$)	965	3,987	9,703	18,534	**33,189**
Public services million US$)	378	1,123	2,317	4,397	**8,215**
Total (million US$)	**5,143**	**15,117**	**29,239**	**46,997**	**96,496**

To facilitate the mobilization and implementation of the EE investments, a technical assistance program should be set up targeting the GoTG as well as the main stakeholders involved in the program. The cost of this technical assistance is estimated at around 4 million dollars, to be mainly financed by donors and implemented during the 2022-2030 period.

EE program funding and supporting mechanisms

Some preliminary proposals for financial supporting mechanisms have been made to initiate and/or accelerate certain EE markets.

Until eliminating completely incandescent and CFLs lamps from the local market, NAWEC may have an upstream credit line from donors to finance controlled quality bulk LED purchases, that are distributed to households with reimbursements of the cost via the electricity bill.

Low efficient appliances should disappear progressively from the Gambian market pursuant to the promulgation of the regulation establishing the MEPS. However, at the start of the program (for example until 2030) and to trigger the transition of the market, this additional cost between high and low efficient appliances may be supported by the State and/or international donors within the framework of an incentive mechanism to be defined.

For the productive sector, EE measures are most often profitable. What blocks the implementation of EE investment is essentially the lack of access to bank loans to finance such investments. To overcome this bottleneck, we recommend setting up a credit line, distributed by local banks, with concessional conditions on interest rates and maturity, which could be financed by one or more donors. For more attractiveness, the credit line may be accompanied, if necessary, by a small loan percentage bonus granted to projects after their completion (for example, 10% of the loan).

Regarding EE Investments in the public services sector, they can be financed through two different options that can also be combined:

- Public financing through the State budget, which can take out credit from international donors to cover resource needs;
- The use of third-party investments through the ESCO mechanism.

The following table presents a summary of the indicative funding structure of the proposed EE investment program.

Table 6: Summary of the indicative funding structure of the EE programs

	Total Cost (million US$)	Equity (million US$)	Loans (million US$)	Public Budget (million US$)	Donors (million US$)
Households	**55.2**	41.4	7.6	6.2	
Industries	**15.7**	4.7	9.9	1.1	
Hotels	**5.9**	1.8	3.7	0.4	
Commercial	**11.6**	3.5	7.3	0.8	
Public services	**8.2**			8.2	
Technical assistance					4.0
Total	**100.6**	**51.4**	**28.5**	**16.7**	**4.0**

EE program impacts and profitability assessment

The implementation of the EE program will allow positive impacts for The Gambia, in particular:

- Electricity saving of **2,573 GWh** on the period **2022-2040** and 3,502 GWh during the lifetime of the measures;
- Primary energy saving of **695 ktoe** on the period **2022-2040** and 946 ktoe during the life time of the measures;
- Avoided CO2 emissions of **2,154 ktCO2** on the period **2022-2040** and 2,931 ktCO2 during the lifetime of the measures.

The implementation of the EE program is also cost effective, as shown by the levelized cost estimates:

- The levelized cost of saved electricity[1] (LCOE) is around $31/MWh, which is still well below the average tariff paid today by NAWEC customers ($180 to $190/MWh).
- The cost per saved primary energy is around $116/toe, compared with the cost of fuel oil supplied on the international market, which exceeds $400 / toe for a barrel of oil costing $80.
- The abatement cost of CO_2 emissions is around $37/t$CO_2$

Finally, if we consider, indicatively, the long-term oil price forecast scenario proposed by Glen Loch Energy in April 2022[2], net present value (NPV) of the EE program will be around **USD 84 million**. This indicates that the EE program would be highly profitable for The Gambia.

Cross-Sectoral Measures to Create an EE Enabling Framework

The GoTG is best able to succeed in implementing EE at scale by establishing a good enabling environment that mitigates barriers and allows organizations involved in project delivery to find efficient business models. The EE enabling environment should include policy frameworks and institutional instruments that promote EE programs and mobilize the required human and

[1] Discounted cost / discounted saved quantity of electricity up to the end of life of the measures.
[2] 82 $/barrel by 2025, 73 $ by 2030, 68 $ by 2035 and 63 $ by 2040

financial resources.

The cross-sectoral axe should include upgrading the institutional, regulatory, and financial frameworks, enhance technical capacities, and provide information and communications on EE targeting consumers and all relevant stakeholders. The main types of measures should include:

1. Regulatory mechanisms such as enacting a national energy efficiency law or act:

   Enacting such law would be an important step toward supporting the implementation of the NEES in the Gambia. It would also render EE a higher priority and provide visibility in the GoTG energy policy and a strong mandate to the MoPE to develop and implement EE programs (including promotion and financing), prepare EE appliance MEPS and labelling, and periodically update the building EE code.

   The EE law lays the foundation for the development of EE markets in The Gambia and will provide clear and ambitious (but realistic) strategic directions. The EE law empowers the MoPE to issue regulations/directives/by-laws to accelerate the adoption of EE technologies and practices across sectors over time to be more efficient and sustainable (e.g. mandatory energy audits for large consumers, minimum energy performance requirements and labelling MEPS, labelling, energy efficiency requirements in public procurement etc.).

2. A dedicated entity to coordinate EE activities will need to be established and funded:

   It's recommended to create an entity specialized in the matter, with administrative, functional, and financial independence for the exercise of its functions. The name Gambian Agency for Energy Efficiency (GAEE) is suggested. The GAEE would be responsible for managing, implementing, and administering EE policies and programs.

3. Financial instruments will need to be put in place to help pay for high upfront costs:

   It's recommended to create a National Fund for EE as an instrument for administering the resources destined to finance EE programs and activities. The sources of financing and the attributions of the fund must be defined in a way that enables the EE Fund to carry out all the activities and EE programmes planned and permitted by the EE law.

4. EE technicians, engineers, and auditors will need to be trained to implement EE measures across the country, and energy efficient technologies and materials will need to be made available on the market;

5. Information and awareness on the benefits of EE will need to be disseminated among key stakeholders in the public and private sectors as well as in schools;

6. An energy information system and statistical disaggregated data by sector need to be developed and strengthened to provide accurate data and indicators and track progress in implementing EE measures.

A Measuring Reporting and Verification system to follow up the strategy implementation

The action plan proposes the establishment of a rigorous MRV system for all energy efficiency projects.

It is intended for decision-makers, providing them with quantitative indicators (macro indicators, impact indicators of EE programs undertaken, benefits for the nation, benefits for the state, benefits for companies and households, and national energy aggregates such as energy intensity) on the evolution of the Gambian's energy profile and, therefore, it provides information on the overall impact of the EE strategy and the action plan. Hence, this component represents a decision-making tool for the readjustment, if necessary, of the EE action plan. Furthermore, this component of MRV makes it possible to guarantee the adequacy between the national macroeconomic objectives and the EE policy while enabling the latter to be adapted in response to national economic events.

The MRV monitoring system represents a tool for:

- Controlling and monitoring the effectiveness of the execution of actions, mobilizing investments, as well as quantifying energy savings and analyzing results;
- Guaranteeing results (for beneficiaries and for state bodies);
- Responding to results and possibly reorienting actions.

MRV will be broken down into three main activities that must be carried out at all levels:

- A parameter monitoring activity (actions, start and end dates, investments, energy savings, etc.);
- A reporting activity (quarterly and annual);
- A verification activity (internal and external) of results.

INTRODUCTION

Strategic Objectives

Aware of the importance of energy efficiency (EE) as a pillar to facilitate universal electricity access, fight against energy poverty, and enhance economic and social benefits, the World Bank Group (WBG) is supporting the Government of The Gambia (GoTG), through the Ministry of Petroleum and Energy (MoPE) and other key stakeholders, is developing The Gambia's first National Energy Efficiency Strategy (NEES) by focusing on the **demand side of electricity**.

The scope of this assignment is to develop the strategy that mainly includes:

- An analysis of existing national EE policies and activities and stakeholder mapping;
- An assessment of energy saving potential;
- Recommendations for a strategy and action plan to upscale the development of energy efficiency in the country.

The strategic objectives of the NEES for The Gambia are:

- Strengthen and increase the competitiveness of the Gambian economy in the residential, industrial, and commercial sectors;
- Reduce GHG emissions from fossil fuels to meet international climate change obligations;
- Reduce energy consumption and energy expenditures of the Gambian population;
- Lower electricity bills and ensure more efficient use of the electricity supply, particularly in public services;
- Lessen The Gambia's dependence on fuel imports.

These strategic objectives form the backbone of the NEES and guide the actions and programs proposed in the EE Action Plan.

Energy Efficiency in The Gambia: Benefits and Opportunities

In recent years, The Gambia has been plagued with electricity shortfalls due to growing electricity demand and a lack of investment in operations, maintenance, and new generation. With support from the WBG, electricity supplies are stabilizing, and investments are expected to lead to a greater share of renewable energy and universal access to electricity by 2030.

Scaling up EE is central to The Gambia's ambitions to provide affordable, reliable, and clean electricity for all. It has many benefits from cutting electricity bills and improving health to reducing CO_2 emissions and expanding access.

Achieving the EE savings potential in The Gambia outlined in the NEES would lead to:

1. A decrease in projected electricity demand by around 11% by 2030 and 25% by 2040 compared to the business-as-usual (BAU) scenario.
2. Reduced peak load by around 20 MW by 2030 and 80 MW by 2040.
3. Avoided investments in new generation capacity of around 25 MW by 2030 and 95 MW by 2040, which respectively represent 16% and 60% of the current operated installed capacity in the country.
4. Lower fossil fuel consumption for power generation, avoiding 73,000 tons of CO_2 emissions (tCO_2e) by 2030 and 236,000 tCO_2e by 2040.
5. A reduction of the country energy bill estimated at around **USD 84 million**

Energy Efficiency Potential by Sector

An assessment of the EE potential in The Gambia was conducted in the residential, commercial, industrial, and agricultural sectors, as well as for public services. It is the first step of a broader engagement to develop an EE strategy for the country.

Based on potential energy saving analysis using top-down as well as bottom-up approaches, the energy savings target was fixed, in consultation with key stakeholders, to 108 GWh by 2030 and 416 GWh by 2040, which represents a reduction in projected electricity demand of around 11% by 2030 and 25% by 2040 compared to BAU.[3]

The residential sector offers the highest share of savings with around two-thirds of the EE potential, followed by the industrial sector (23%) and then commercial buildings (13%).

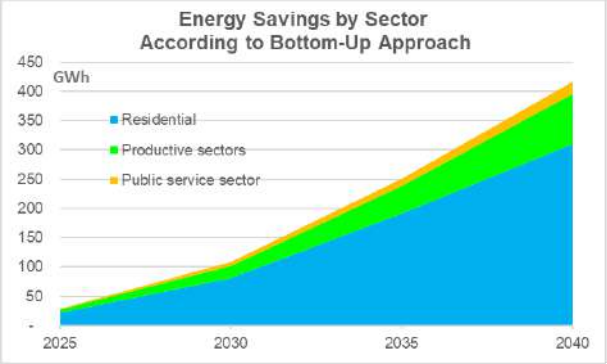

Figure 3: Energy Savings Potential by Sector

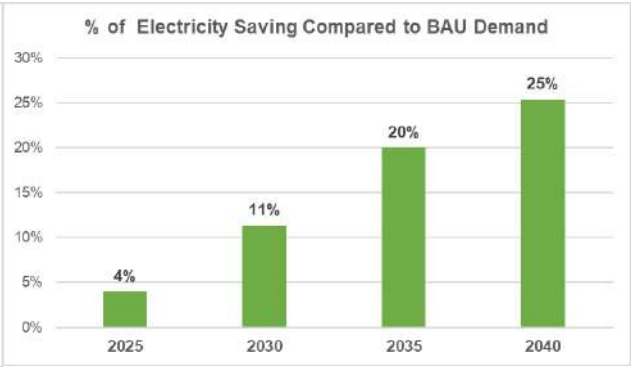

Figure 4: Electricity Demand Reduction Compared to BAU Scenario

The residential sector offers the highest share of savings with around two-thirds of the EE potential, followed by the industrial sector (23%) and then commercial buildings (13%). The table below presents the detailed EE bottom-up energy savings potential by sector and technology.

[3] The BAU scenario is defined as energy consumption progressing with the same trend observed today.

Table 7: Summary of the Potential Energy Savings Across Sectors, Estimated Using the Bottom-Up Approach

Sector/Measures	Savings	
	2030 (GWh)	2040 (GWh)
Residential	**82**	**310**
Efficient lighting	52	125
Efficient refrigerators	24	116
Efficient air conditioning	6	69
Productive Sector	**20**	**86**
EE in industries	7	34
EE in hotels	4	9
EE in commercial buildings	9	43
Public Services	**6**	**20**
EE in public buildings	3	13
Efficient streetlighting	1	3
EE in water pumping	2	5
Total Bottom-Up	**108**	**416**
% of Savings Compared to BAU Energy Consumption	**11%**	**25%**

Overcoming Barriers to Achieve the Benefits of Energy Efficiency

To achieve the EE potential identified, a coherent strategy and action plan integrating regulatory, incentive, financial, and supporting measures needs to be designed and implemented to mobilize actors, assign responsibilities, and implement measures in each sector.

This report is focused on the recommended EE action plan to upscale the development of EE in the country and covers the following components of the NEES:

- The EE strategy including the main EE measures;
- The Roadmap to implement the Strategy;
- The implementation schedule;
- Results evaluation framework.

Two reports precede the NEES document, a Status Report on EE in The Gambia and an Assessment Report on the EE Potential in the Electricity Sector in The Gambia. Both reports present in-depth analyses on the actual situation of the electricity market and the EE opportunities, both of which are available for consultation.

1 NATIONAL ENERGY EFFICIENCY STRATEGY

1.1 Overview of EE Support Mechanisms

Governments seeking to improve EE have a toolbox of policies that they can deploy across sectors. These tools can be categorized into three main mechanisms: (1) Laws and regulations that mandate EE improvements; (2) financial incentives that encourage the uptake of EE technologies and systems; and (3) information to raise awareness and build capacity across stakeholders.

Figure 5: Diagram of Energy Efficiency Mechanisms

All three support mechanisms should be implemented together because they serve different purposes (see Figure 6) in the transformation of markets. Laws and regulations such as minimum energy performance standards (MEPS) can be used to ban less efficient products from the market. Information such as labels helps consumers choose between products with different levels of energy performance, and financial incentives lower the upfront costs of most energy efficient products.

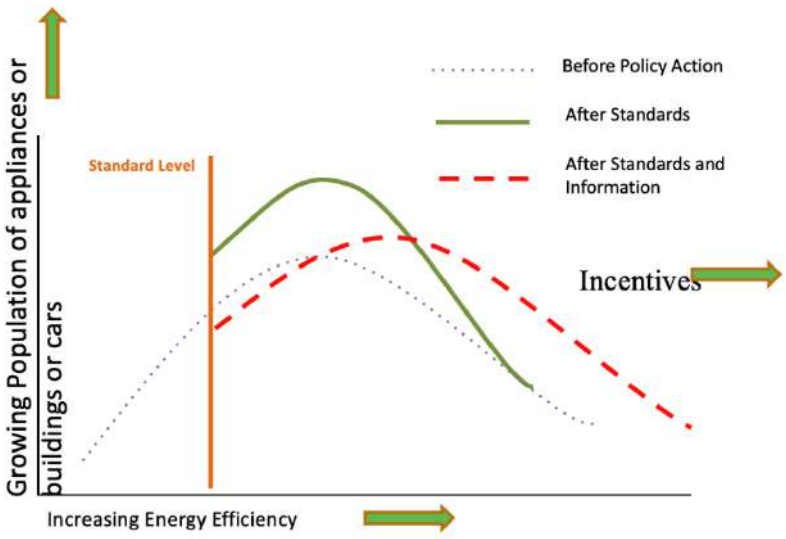

Figure 6: Energy Efficiency Mechanisms Work Together to Transform Markets

All of the policy recommendations outlined herein fall into these three categories regardless of whether they target households, industry, or the commercial sector. When designing and implementing EE interventions, decision makers should continuously refer to Figures 3 and 4 to ensure the necessary policies are in place in each sector to move the market toward transformation. On their own, incentives will not lead to market transformation because people will continue to buy the cheapest, most inefficient products if they are still available. Similarly, information alone is often not enough to encourage people to buy products with higher upfront costs. Incentives are often needed to help consumers make that step. Moreover, capacity building is essential to ensuring that trained and certified professionals are available to conduct energy audits, carry out building upgrades, and construct energy efficient buildings.

1.2 Introduction to NEES

The recommended NEES consists of a set of actions for The Gambia to take based on its current electricity consumption patterns and opportunities for EE improvements. Some of the actions involve steps that The Gambia has already begun to take, such as improving EE in streetlighting, although these actions need to be further broadened.

Cross-Sectoral Measures to Create an EE Enabling Framework

The GoTG is best able to succeed in implementing EE at scale by establishing good enabling environment that mitigates barriers and allows organizations involved in project delivery to find efficient business models. The EE enabling environment should include policy frameworks and institutional instruments that promote EE programs and mobilize the required human and financial resources.

The cross-sectoral axe should include upgrading the institutional, regulatory, and financial frameworks, enhance technical capacities, and provide information and communications on EE targeting consumers and all relevant stakeholders. The main types of measures should include:

1. Regulatory mechanisms such as minimum energy performance requirements and labelling, building codes, mandatory energy audits for large consumers, and energy efficiency requirements in public procurement will need to be established;
2. A dedicated entity to coordinate EE activities will need to be established and funded;
3. EE technicians, engineers, and auditors will need to be trained to implement EE measures across the country, and energy efficient technologies and materials will need to be made available on the market;
4. Financial instruments will need to be put in place to help pay for high upfront costs;
5. Information and awareness on the benefits of EE will need to be disseminated among key stakeholders in the public and private sectors as well as in schools;
6. An energy information system and statistical disaggregated data by sector need to be developed and strengthened to provide accurate data and indicators and track progress in implementing EE measures.

Direct Sectoral Support to EE

Given that the residential, public service, and productive sectors account for more than 90% of The Gambia's electricity consumption, it is recommended that these three sectors be the focus of EE actions.

Given that the residential sector will account for more than **75%** of total electricity energy savings in the country by 2030, it is recommended that this sector be targeted as a priority with a focus on lighting and domestic refrigeration. However, while these two energy end uses account for the largest portion of electricity energy savings, experience in other countries shows that, as economies develop, new uses of electricity such as room air conditioners (RAC) and other appliances can rapidly increase. Therefore, actions should be taken to address what will potentially be significant uses of electricity in the future. It is easier and cheaper to take steps now than to try replacing inefficient products after their purchase and installation.

Several of our recommendations involve adopting minimum energy performance standards (MEPS) for energy consuming products. MEPS are a powerful regulatory tool to improve EE in a cost-effective manner. Labelling serves to promote the use of energy efficient products, while MEPS are focused on banning inefficient products from the market.

The productive sector, including industries, hotels, and commercial buildings, will contribute to **20%** of total electricity energy savings. Given the importance of that sector in the creation of the country's wealth, establishing a supporting program to improve EE in that sector will reduce its electricity intensity and thus enhance its economic competitiveness.

Although the public sector will contribute less than **5%** to total electricity energy savings, it is recommended that this sector be targeted through a dedicated program. The public sector can have a catalytic effect on local markets by demonstrating good behaviour to the private sector and the general public while stimulating nascent markets for EE goods and services.

The direct sectoral measures to tap EE potential are listed in the table below.

Subsector	Recommended EE Measures
Residential Sector	
Lighting	Phase out inefficient lighting products and adopt MEPS for on-grid and off-grid lighting devices
	Design and put in place financial and supportive mechanisms to facilitate the replacement of incandescent lamps by LED bulbs in existing households
	Design and put in place financial and supportive mechanisms to facilitate the distribution of LED bulbs to households newly connected to the grid
	Increase the amount of EE lighting information and raise awareness
Refrigerators	Introduce mandatory labelling for refrigerators
	Introduce MEPS for refrigerators
	Adopt a mechanism to accelerate the replacement of old, inefficient refrigerators
	Distribute information on and raise awareness about efficient refrigerators
Room Air Conditioners	Introduce mandatory labelling for RACs
	Introduce MEPS for RACs

Subsector	Recommended EE Measures
Appliances and Equipment	Introduce labelling and MEPS for other electrical appliances
	Increase information on and raise awareness about efficient household appliances
Cooking	Develop standards and labelling for cookstoves to guarantee quality in the long term
	Facilitate the market penetration of efficient cookstoves and alternative fuel uses
Productive Sector	
Industry, Hotels, and Commercial Buildings	Introduce mandatory energy audits for large energy consumers
	Introduce voluntary adherence to energy management protocols targeting large energy consumers, ISO 50001
	Establish a program to improve EE in MSMEs
	Introduce MEPS for industrial energy using equipment
	Introduce a mandatory EE building code for new buildings
	Establish complementary policies to support EE in the productive sector
Public Services	
Office Buildings, Hospitals, and Schools	Establish a national pilot program to improve EE in public buildings
Water Supply	Establish a program to improve EE in the water sector
Streetlighting	Establish a dedicated program for the deployment of EE streetlighting

The recommended National Energy Efficiency Strategy (NEES) detailed in the sections below has been subject to a process of validation and consultation with various key stakeholders to ensure ownership of the proposed EE measures by the main targeted sectors and players and thereby facilitate the effective implementation of the NEES.

Concertation Process with Key Stakeholders

The MoPE organized a concertation workshop on 16 and 17 February 2022 with the key stakeholders representing the private and public sectors as well as civil society.

The objective of the workshop was to present and validate the proposed EE measures targeting the following themes: (i) The residential sector (electricity and cooking), (ii) the productive sector (industry, hotels), (iii) public services (buildings, water, streetlighting), and (iv) cross-cutting measures (institutional and regulatory aspects).

The workshop allowed the participants to:

- Review the proposed measures;
- Prioritize the measures;
- Identify the key stakeholders responsible for the implementation of each measure;
- Identify the needs, resources, and capacity to implement the measures;
- Agree on an action plan and milestones for next steps.

1.3 Cross-Sectoral Measures

1.3.1 Measure 1. Enacting EE Law or Act (including a gender framework)

A national energy efficiency law or act would be an important step toward supporting the implementation of the NEES. It would also render EE a higher priority and provide visibility to the GoTG energy policy and a strong mandate to the MoPE to develop and implement EE programs (including promotion and financing), prepare EE appliance MEPS and labelling, and periodically update the EE building code.

The EE law lays the foundation for the development of EE markets in The Gambia and will provide clear and ambitious (but realistic) strategic directions. The EE law empowers the MoPE to issue regulations/directives/by-laws to accelerate the adoption of EE technologies and practices across sectors over time to be more efficient and sustainable (e.g. mandatory energy audits, MEPS, labelling, etc.).

Structure

The new law should be a framework law. The law shall establish the general principles and objectives of the policy to be regulated and empower the Executive Branch to regulate and implement it within the framework of what is permitted by the current legal and constitutional regime. In general, in a framework law, the competencies and responsibilities of the relevant institutions are consigned, the regulated sectors are determined, financial structures created, and EE sectoral policies outlined in a general manner, especially those that are mandatory. By virtue of its flexibility and adaptability to future circumstances, the framework law format is most appropriate to allow the efficient implementation of policies.

The framework law should be divided into following chapters.

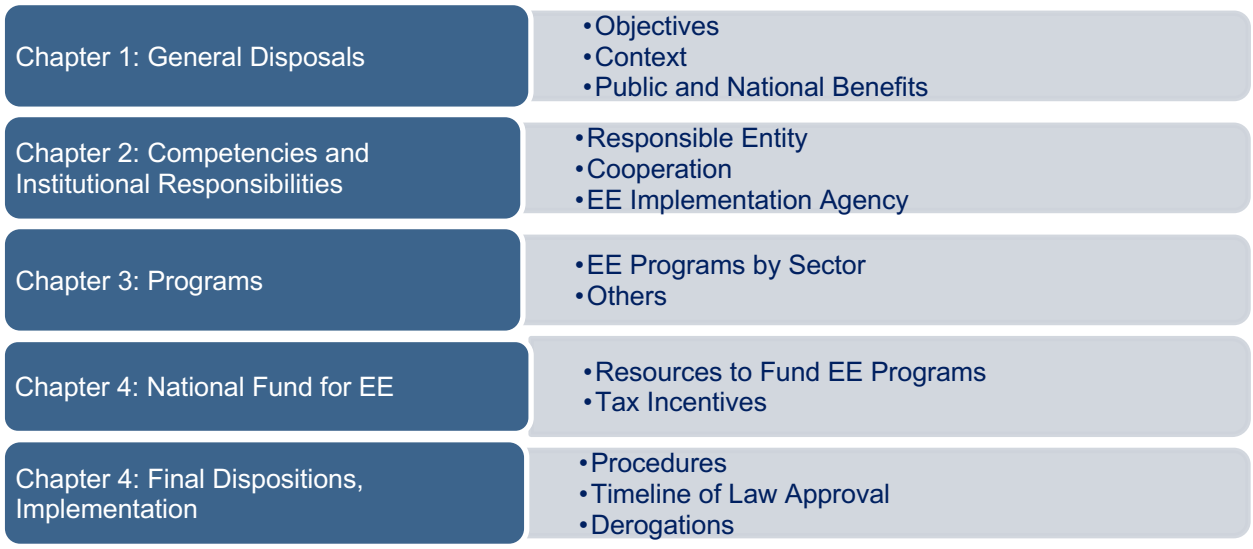

Figure 7: Structure of the EE Law

Contents

The framework law should be as simple and succinct as possible, thus facilitating the process of legislative creation and approval. The provisions of the law would be developed through an organic or general regulation along with specific regulations on each program and/or activity.

- **Statement of reasons:** The reasons or considerations of the law would be in accordance with the reasons of the NEES. The following would be the most relevant:
  - Proper articulation of the government's purpose and intent for the EE policy;
  - Specific, quantitative, and time-bound goals or objectives;
  - Justification of the need for government intervention;
  - Responsibility for planning and implementation with a government entity;
  - Gender mainstreaming framework.
- **Objectives of the law:** The objectives of the law would be to strengthen and increase the competitiveness of the national economy, reduce expenses related to energy consumption, reduce the country's dependence on fossil fuels, promote sustainable development and decarbonization of The Gambia, and combat climate change.
- **Scope of application of the law:** It is very important that the law define its scope of application since this would enable both the Ministry of Petroleum and Energy and EE entity (agency) to develop programs and regulate aspects in a multisectoral manner. It is recommended that the national EE law with its legal and regulatory framework address EE in all sectors and for all fuels, not just electricity in transport, industry, commerce, residential, buildings, agriculture, and services in the public and private spheres.
- **Institutional powers and attributions:**
  - Lead ministry in charge: At the beginning of this chapter of the law, it should be indicated that the Executive Branch is in charge of defining the country's energy policy through the Ministry of Petroleum and Energy (MoPE) as the lead ministry of the energy sector. It should also be indicated that the MoPE is the competent institution for the application of the law, its regulations, and other norms derived from it with powers of direction, planning, coordination, regulation, implementation, supervision, monitoring, evaluation, and control in accordance with the National Energy Plan, the NEES, and EE National Plan.
  - Compliance with regulations and institutional cooperation: The other institutions, ministries, entities, bodies, and public companies, centralized and decentralized, must abide by the provisions and guidelines regarding EE issued by the MoPE. Those who are directly or indirectly linked to the implementation of EE policies and programs must cooperate and collaborate with the MoPE.
  - The Proposed Gambian Agency for Energy Efficiency: The law should create an entity specialized in the matter, with administrative, functional, and financial independence for the exercise of its functions. The name Gambian Agency for Energy Efficiency (GAEE) is suggested. The proposed GAEE would be responsible for managing, implementing, and administering EE policies and programs.

- **National Fund for EE:** The law should create the National Fund for EE as an instrument for administering the resources destined to finance EE programs and activities. The law must define which sources of financing are allowed for the fund.
- **Data and information:** The law should expressly establish the obligation of energy generation and distribution companies and other public entities to regularly provide data and information to GAEE and/or the MoPE.
- **Labelling and EE standards programs for appliances and equipment:** The law should contain a reference to mandatory EE standards and labelling programs for appliances and equipment. To this end, the law should specify the basic elements of the programs and sanctions for non-compliance.
- **Other mandatory programs:** It is considered advisable to incorporate other programs or other activities as mandatory; these should be specified in the text of the law.
- **Final and transitory provisions:** In this segment, the law would establish the deadlines for the issuance of the regulations and the term for the law to come into force. It would also determine which laws and/or regulations should be repealed and/or reformed.
- The EE law should include and require implementing a Gender Mainstreaming Framework (see Appendix I) as well as a Monitoring, Verification, and Evaluation (MV&E) Framework (see Chapter 4).

Human and Financial Resources, Deadlines, and Responsible Entity

- It is important that the process of drafting the law and its secondary regulations be one of collaboration and cooperation between external experts and MoPE staff, especially the Energy Directorate. In this manner, the capacities of the Energy Directorate would be strengthened, which is also important to be able to conduct the public consultation process and legislative process.
- As part of their Terms of Reference, external experts are expected to develop the deliverables below:
  - Conduct an in-depth desk review of existing legislation.
  - Submit a Desk Review Report for consideration and approval by a constituted Review Committee (comprising relevant stakeholders).
  - Draft the framework law based on the recommendations of the Desk Review Report, accompanied by an explanatory memorandum in compliance with the Standing Orders of the National Assembly.
  - Participate and facilitate a meeting with the Review Committee to discuss the draft of the framework law based on approved recommendations as outlined in the Desk Review Report.
  - Prepare the first draft of the framework law in preparation for a validation meeting.
  - Facilitate a stakeholder meeting for the validation of the proposed draft framework law.
  - Submit the final validated framework law.

Table 8: Human and Financial Resources, Deadlines, and Responsible Parties – EE Framework Law

Action	External Resources	Internal Resources	Deadline	Responsible
1. Identify and obtain financial resources from national and/or international institutions for the drafting of the law and its general regulations and the constitution of a trust		15 days, MoPE staff	June 2022	MoPE: Office of the Minister and Permanent Secretary, with the support of the Presidency
2. Prepare the contract for experts to prepare the draft of the law (preparation of terms of reference, etc.)		10 days, MoPE staff	June 2022	MoPE: Office of the Minister and Permanent Secretary, with the support of the Presidency
3. Draft the law and consult with stakeholders	› Core team: 2 senior legal experts (20 days each); 1 expert in EE programs and governance (5 days) › Lawyers: 1 national legal expert (2 days); 1 national legal expert (2 days)	10 days, the MoPE lawyer who would support the process of drafting the law	July 2022 – October 2022	Team of external experts, in coordination and permanent communication with the MoPE (and with other stakeholders if applicable)
4. Conduct a workshop with the MoPE staff in charge of the consultation process and the legislative process on the content of the law, its benefits	2 days of training by the experts who prepared the draft law	50 days, MoPE staff	November 2022	Team of experts that prepared the draft law
5. Hold public consultation process (consultations with specific institutions, etc.)	Occasional support from a member of the legal team	20 days, MoPE staff	November 2022 - January 2023	MoPE: Directorate of Energy (DoE) (in cooperation with stakeholders)
6. Prepare final version of law based on the result of public consultations	3 days, 2 external legal experts	5 days, MoPE staff (DoE)	February 2023	Director of the DoE, Permanent Secretary and Minister of the MoPE
7. Submit the law to the Assembly			Extraordinary session of the Assembly, March-April 2023	Minister of MoPE and Speaker of the Assembly
8. Accompany the approval process of the law		50-100 days, MoPE staff	2023	MoPE: Office of the Minister and Permanent Secretary, with the support of the Presidency

The Proposed Gambian Agency for Energy Efficiency

The proposed GAEE must be created by the EE law that must define what type of body proposed GAEE would be and its main characteristics including: functions, competencies, responsibilities, sources of financing, structure, etc.

The institutional structure of the proposed GAEE is a key issue. The World Bank conducted a study in 2006 on institutional frameworks for EE implementation. The study identified seven possible institutional models. The models are presented in Appendix 2 along with the advantages and disadvantages of each.

Of all these models, the entity focused entirely on EE is the most relevant to The Gambia. Initially, this entity would be part of the MoPE. In the medium term, it is recommended that an independent agency be established, whose sole objective and authority is to implement the NEES and a full suite of EE and sustainable energy initiatives in the country. The dedicated EE agency should have legal status, financial independence, and the ability to create financial schemes.

Proposed GAEE independent body attached to the MoPE

In this option, proposed GAEE would have instrumental legal status. The link with the higher administrative dependency would be maintained, in this case the Minister of MoPE, which would allow the agency's actions to be subject to the guidelines and instructions of the Minister.

The law must define the degree of responsibility that proposed GAEE would have, the relations between the agency and MoPE, and the horizontal and vertical coordination mechanisms with other entities and offices as well as with other state institutions if necessary.

Competences and functions

Proposed GAEE would have powers to develop most of the EE programs, as well as conduct education campaigns, administer the EE Fund, promote public-private initiatives, etc.

Proposed GAEE would also have the power to regulate, supervise, and sanction in relation to EE policies and programs.

Organizational structure

An organizational structure as flat as possible is suggested, comprised of highly trained personnel. The structure should be guided by the functions carried out by the agency. It is suggested that proposed GAEE be headed by a general director, followed by department heads (who can also be called deputy directors) according to the main areas of work that the agency would have. Alternatively, proposed GAEE could be directed by an Executive Council composed of a maximum of three experts in the field. Each department would have a technical team, that is, with experts in the corresponding subjects (among others: standards and labelling, data collection, analysis and processing, sectoral EE programs, information and education). Finally, the agency would also have support staff such as administrators, secretaries, receptionists, legal advisors, experts in statistics, marketing, finance, and economics (for planning).

In a first stage, the director (alternatively the Executive Council) would be appointed, who in turn would appoint one person for each future department, a legal adviser, a receptionist and/or secretary, and an administrative manager. In this phase, offices, equipment, and materials must be acquired.
In a later phase, when the initial portfolio of programs has been designed, the necessary technical or expert personnel will be hired. According to the organizational chart, the characteristics of the market, and EE programs recommended for The Gambia, it is estimated that proposed GAEE staff would count between 15 and 20 people, depending on the type of body it is. The proposed GAEE, as an independent body attached to the MoPE, would require more personnel due to its regulatory, supervisory, and

National Energy Efficiency Fund

The action proposed here consists of creating the National Energy Efficiency Fund through the approval of the EE law.

Competences and functions

The EE law must define the attributions and faculties of the proposed GAEE in accordance with the current legal system. These must be specified in the law and in its organic regulations. In general, the law should enable the EE Fund to carry out all contracts and activities permitted by law. Some of the EE Fund attributions could be:

- Manage and capture donation funds and loans from international organizations as well as other contributions and sources (public and private) that are intended to promote EE and GHG reductions.
- Manage special parafiscal contributions from energy distribution companies.
- Hire professional services and cover the costs of executing EE projects and programs.
- Support and provide financing for the programs of minimum standards and labelling of equipment and appliances implemented by proposed GAEE, as permitted by law, finance activities to control and monitor EE labelling of equipment and appliances, as permitted by law.
- Provide funding and manage other EE programs.
- Provide funding for training and education programs as well as information and outreach campaigns targeting the general public.
- Provide funding for EE program technical assistance.
- Promote and finance EE research and innovative projects.
- Provide financing to carry out diagnoses, audits and energy studies for the public and private sectors
- Provide financial incentives for EE measures, investments in the public and private sectors.
- Finance the costs associated with training specialized technical personnel and other proposed GAEE operating costs, as permitted by law.
- Finance competitions and/or prizes for innovative EE research projects.
- Finance market studies.
- Finance the laboratories and equipment necessary to promote and develop EE.
- Finance and support the creation of public-private initiatives.
- Granting guarantees and bonds to obtain credits and mortgages related to EE (e.g. guarantees for mortgages for the construction of efficient buildings or remodelling of existing buildings).

Organizational structure

The EE Fund would be made up of one or several trusts subscribed with national banks. The constitutive trust or trusts of the EE Fund would be governed by the MoFEA, which would guarantee the flexibility and agility necessary for the successful management of its resources. The constitutive or initial trust of the EE Fund should be a trust for the management of EE programs, projects, and activities. Subsequently, the proposed GAEE could establish other trusts according to the needs of the moment. An example of a trust in a second phase is a guaranteed trust that could support requests for financing to commercial banks by individuals and companies in the private sector.

Two factors would contribute to the financial stability of the fund over time, which are necessary for the proper planning and implementation of EE programs. First, the National Treasury regulations would not be applicable to EE Fund resources, nor would they be accounted for within the Fund. A second factor would be the regular and constant income from special parafiscal contributions, which would also make the fund self-sufficient. The constitutive trust of the EE Fund should be constituted for a minimum of 10 years and extendable for another 10 years.

It is recommended that the legal expert in charge of drafting the articles on the EE Fund in the EE law be the one who leads and coordinates the drafting of the parts of the regulation on the merits as well as the process of its constitution. The proposed GAEE would be the administrator of the EE Fund in the manner determined by the EE framework law and its regulations. The proposed GAEE would be in charge of creating a first portfolio of EE programs at the beginning of its work, followed with some regularity (depending on the programs) by other portfolios.

1.3.2 Measure 2. Improve Knowledge of and Awareness About EE and its Benefits for Different Stakeholders

The analysis conducted in the country during the assessment phase revealed that there is a need to strengthen knowledge of EE basics and measure implementation among government representatives and enhance capacity of their professionals in the energy sector. The table below presents the capacity needs and GoTG representatives to be targeted for capacity building activities.

Table 9: Capacity Needs and Target GoTG Representatives

Stakeholder Groups	Key Stakeholders	Capacity Needs
› Policy-makers in the energy sector	› Ministry of Petroleum Energy (MoPE) › Ministry of Environment Climate Change and Natural Resources (MECCNAR) › Public Utilities Regulatory Authority (PURA) › The Gambia Standards Bureau (TGSB) › National Environment Agency (NEA) › National Water and Electricity Company Ltd (NAWEC)	› Develop and operationalize coherent, comprehensive, and evidence-based policies, laws, and regulations that create a level playing field for EE measures. › Implement energy planning.
› Policy-makers not directly linked to energy	› Ministry of Finance and Economic Affairs (MoFEA) › Ministry of Trade, Industry, Regional Integration and Employment (MOTIE) › Ministry of Gender Children and Social Welfare › Ministry of Transport, Works and Infrastructure › Ministry of Tourism and Culture › The Association of Non-Governmental Organizations (TANGO) › The Gambia Chamber of Commerce and Industry (GCCI) › Gambia Hotel Association (GHA) › Gambia Manufacturers' Association (GMA) › Ministry of Justice (MOJ) › Gambia Revenue Authority (GRA)	› Design adequate EE policies and measures targeting the proper sectors. › Integrate EE measures into the proper sectors.

To ensure the successful implementation of the strategy requires support, unanimity, and behaviour change. A communication campaign is necessary to debate with key stakeholders on their concerns and perceptions of EE measures and benefits and proactively address such concerns with direct information. The communication and awareness campaigns should be implemented through a plan to clarify the necessity and benefits of EE measures. The key stakeholders of EE measures include policy and decision-makers, companies trading in energy products, citizens, civil society organizations, research institutions, and academic institutions. Others include private actors in the industrial, commercial, tourism, public buildings, streetlighting, and water sectors.

The communication and awareness campaigns should be planned and implemented by experienced professionals before and during the implementation of the NEES. The government needs to set aside funds to support this important measure of the strategy.

Table 10: Target Groups and Capacity Needs of Communication and Awareness Campaign

Stakeholder Groups	Capacity Needs
› Policy and decision-makers	› Business case for EE and linkage between EE and gender.
› Citizens › Civil society organizations	› Communicate the role of EE in lowering customer energy bills and system costs by promoting behaviour change in households, including gender aspects.
› Research institutions and academic institutions	› Workshops on EE measures and benefits, competitions on EE, and other initiatives including linkage between EE and gender.
› Industrial, commercial, tourism, public buildings, streetlighting, and water sectors	› Business case for EE at the national, utility, and other relevant levels, addressing adequate customer, utility, and societal perspectives, including gender aspects.

1.3.3 Measure 3. Collect End-Use Data and Monitor and Report EE Indicators

Information

Having a detailed, reliable, and continuously updated energy database is a key requirement for the design, implementation, monitoring, and evaluation of EE policies and programs.

In addition, it allows prioritizing policies based on their energy, economic, and environmental impacts to demonstrate whether productivity increases for a given energy consumption end use and provide information to predict energy use in various sectors and end uses. The expectation of the creation of an energy database is to generate a set of specific indicators that make it possible to determine the evolution of national EE programs, analyze results, and make the corresponding political decisions.

In the short term, the actions to be carried out fit in with the existing legal framework. Hiring staff for the team dedicated to EE indicators should be included in the staff to be hired by the MoPE. In the medium term, once GAEE is created, the powers and qualified personnel of the EE indicators program would be transferred to this new entity. Likewise, the new framework law would include obligations to share data and information by public and private institutions.

Definition of data to be collected and the methodology

In this action, the following tasks are developed:

- Prioritize the sectors and subsectors;
- Understand how energy is used in each sector;
- Identify the preferred indicators based on feasibility and relevance. For each end use, there are several levels of indicators, for example:
  - General;
  - Detailed;
  - Very detailed.
- Determine the data needed to establish the indicators;
- Explore existing data sources and determine data-collection methodologies.

The methodology for collecting data and calculating the indicators must be harmonized to be able to compare the results and reduce confusion about concepts. There are two main approaches that can be used. The top-down approach, which uses general data to obtain disaggregated information, and the bottom-up approach, which uses EE data-collection sampling to determine EE indicators with statistical analysis.

The following table presents a preliminary list of EE indicators that should be available in The Gambia once that action plan is implemented. Certain indicators are currently available, but there are no data disaggregated by area, user, gender, or other categories.

Table 11: Preliminary List of EE Indicators

Sectors	Indicators of Final Energy Consumption	Final Use
Residential	Total m^2 for housing, as well as per gender, and fuel	› Heating and air conditioning › Lighting › Equipment (refrigerator, freezer, dishwasher, washer, dryer, television, computer, etc.)
	Total per user, gender, household (in kWh/person), housing, and fuel	Hot water
Public Services	Total by category of buildings (offices, restaurants, hotels, shops, supermarkets, etc.), by m^2 (in kWh/m^2), gender, and fuel	› Heating and air conditioning › Hot water › Lighting › Other equipment › Other uses (parking lighting, for example)
Productive Sector	Total per each category of the productive sector	Steam, power, pumping, ventilation, refrigeration, compressed air, lighting, process, etc.
Cooking	Total by m^2 for housing gender and fuel	Cooking

To ensure the exchange of data in the short term, agreements must be established with institutions to concert efforts in the generation of new data and mechanisms with institutions for the provision of the information required to create and update the database in a sustainable manner. These agreements would have a voluntary compliance scheme. In the long term, thanks to the new EE framework law, there will be an obligation to share and exchange data and information.

Monitoring

The information and data must be updated according to the data plan that will be defined at the beginning of the process. The frequency will depend in part on the speed of market developments. In this action, the necessary work will be carried out to collect additional data according to the defined methodology. Experts and consultancies necessary for data collection will be hired.

Reporting

The indicators and related information will be published to facilitate their use by the market and public bodies. The EE indicators must be published on a user-friendly and freely accessible platform to guarantee all interested parties can access the information.

1.4 Residential Sector: Lighting and Household Appliances

The measures described below should be compiled under a unique residential program to be introduced through a decree of the EE law. The residential program will cover lighting and household appliances and include:

- Introducing labelling and MEPS for lighting and household appliances, starting with high energy using appliances (domestic light bulbs, refrigerators, air conditioners);
- Design and roll out an incentive mechanism to accelerate the replacement of the stock of inefficient bulbs by high-quality LEDs and inefficient appliances;
- Design and launch an information campaign on the benefits of efficient lighting and appliance products.

To be effective, labelling and MEPS programs must be carefully implemented. The performance levels and program requirements must be developed with stakeholders to ensure maximum participation. Once implemented, the labelling and MEPS program should be constantly monitored, evaluated, and updated. The most important factor critical for its success is a functional monitoring, verification, and enforcement (MV&E) system that can ensure that products fully comply with the applicable regulatory measures.

The residential program should include a strong gender component as women's empowerment is linked to the provision, acquisition, and use of appliances that save time and reduce drudgery since heavy work and time poverty are two major aspects of gender inequality. Policy-makers and development partners should commission research in this area where there are evidence gaps to inform policy and program design and ensure gender issues are properly considered in the residential sector. An inspiring program on gender mainstreaming in the residential sector is the Energy Efficient Lighting and Appliances (EELA) Project in Southern and East Africa.

Enactment of Regulation Imposing Labelling and MEPS

The enactment of a regulation imposing labelling and MEPS is a continuous cycle because the efficiency levels of appliances are not fixed but a dynamic indicator. The processes indicated in the figure below serve to inform the activities required to enact MEPS and achieve the objectives of the strategy. However, an in-field survey on lighting and household appliances needs to be conducted in developing MEPS. This serves to determine the MEPS levels to be adopted or revised. Sensitization and awareness raising are essential; hence, a multi-sectorial approach must be adopted since this involves diverse stakeholders and their buy-in is crucial.

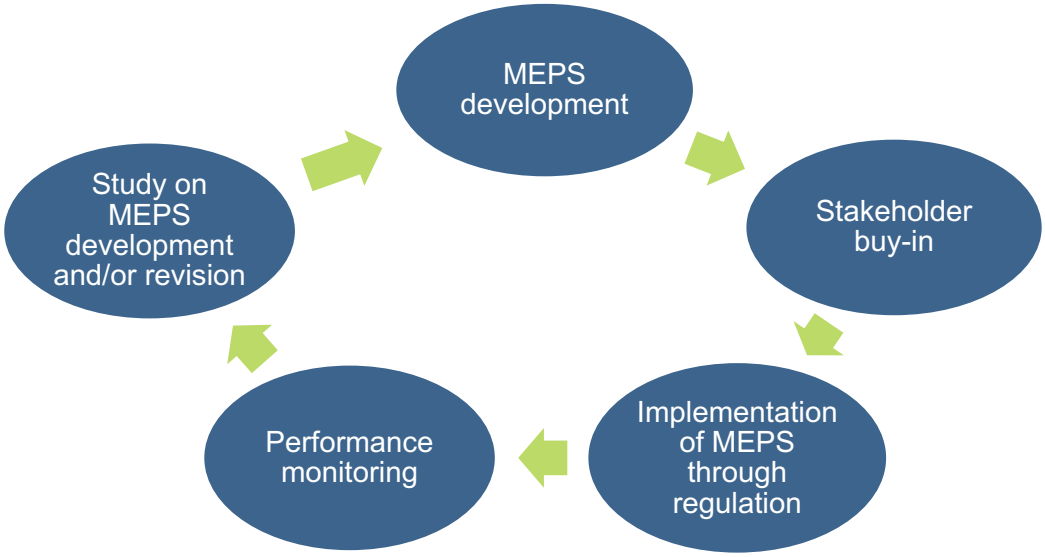

Figure 8: MEPS Development Process

The MEPS is implemented through a regulation, but this can only be implemented after a regulatory impact assessment is conducted to serve as reference. Following the implementation of the MEPS, a market analysis is carried out to establish new MEPS levels.

These will be achieved through the following six activities:

- Sensitization workshops, capacity building seminars, adverts and social media posts: These entail annual campaigns/sensitization related to labelling and MEPS for targeted domestic appliances.
- Market survey on the use of appliances targeted under MEPS: This would require the support of a consultant to conduct a survey and stakeholder validation workshop on the results of the survey.
- Setting up of testing facilities: This would require two important activities that should be achieved. First, there should be capacity building on testing protocols. Secondly, accredited testing laboratories need to be established. However, there is the option of seeking access to laboratories in the subregion, which comes with its challenges.
- Development of MEPS: MEPS development would involve technical committees spearheaded by The Gambia Standards Bureau.
- Adopting the MEPS: The adoption of MEPS into regulation would equally involve a consultation process with stakeholders through technical committees.
- Performance assessment of adopted MEPS: The efficiency of appliances is an evolving indicator; thus, countries need to revise their MEPS after a specific period. As such, the performance of appliances compliant to MEPS can be evaluated after five years or based on regional benchmarking.

International experience suggests that, for the labelling and MEPS to be effective, the following key success factors should be carefully considered.

- Performance levels and other requirements must be identified by giving due consideration to the technological developments and market trends related to industrial equipment.
- National MEPS levels should consider regional conditions and international standards.
- Performance levels and program requirements need to be developed based on stakeholder input to gain their support and participation.
- The program should involve stakeholders representing the government and private sector, including government standards and testing agencies, standardization institutes, certification and accreditation bodies, testing laboratories, as well as manufacturers and suppliers of energy using equipment.

1.4.1 Measure 1. Phase Out Inefficient Lighting Products and Adopting MEPS for On-Grid and Off-Grid Lighting Devices

Enactment of Regulation Prohibiting the Manufacture, Sale, and Importation of Inefficient Lamps

With respect to regulation, it is proposed that the manufacturing, importation, and sale of incandescent lamps be banned, at least starting with 60 W and 100 W bulbs. Indeed, a total ban may seem harsh on the market but would prove beneficial by achieving significant energy savings. Similar consideration should be taken for fluorescent lamps and CFLs since they consume twice as much as LEDs, and they have a shorter lifespan. These can be well incorporated in the MEPS; it is the responsibility of TGSB to prepare and adopt the MEPS and facilitate the regulation process.

However, such stringent measures commence with sensitization and education regarding objectives. This is followed by the regulatory, monitoring, and verification infrastructure as well as enforcement to facilitate the effectiveness of the MEPS and mandatory labelling. This would ensure that all lighting products entering the country comply with the MEPS and are labelled and certified prior to entry into the country. Likewise, ensuring that products without labelling undergo testing at accredited labs for an extra fee before labelling and certification would discourage the importation of inefficient non-labelled lighting products.

Certainly, action of this nature would create a paradigm shift in market trends for efficient lighting products, e.g. LEDs. Furthermore, it would narrow the current grey market as products coming into the country would be required to comply with the MEPS and be labelled. Nonetheless, if exemptions are made, these should be specific and limited in scope to avoid room for abuse. For example, exemptions can be made for appliance lighting, but importers of such lamps will need to demonstrate that the lamps are designed for such applications (such as thicker glass envelopes, heat resistance, longer service life, etc.) with no LED alternatives available. A lesson learned from exemptions made by other countries that have taken these steps is that suppliers attempt to sell their exempted specialty products as general service lighting.

1.4.2 Measure 2. Design and Put in Place a Financial and Supportive Mechanism to Replace Inefficient Lamps in Existing Households by LED Bulbs

Utility-Managed EE Program

The GoTG should develop and adopt MEPS for lighting while promoting the use of LEDs for efficient lighting. The use of efficient lighting devices would greatly impact all three major sectors, namely the residential, productive and public sectors. Likewise, these initiatives serve as drivers for efficient lighting across the various sectors. It is worth noting that 52% of the lighting use in the residential sector is powered by the utility NAWEC.[4]

However, a utility-driven EE program would have a significant impact on electrified customers since all households connected to the electricity grid would be part of the program. In the recent past, there has been a major transition from the use of incandescent bulbs to the use of CFLs and linear fluorescent lamps because they are more energy efficient solutions. Hence, the program would promote a transition from the current less efficient lighting products such as fluorescent lamps and CFLs toward technologies such as LEDs.

Nonetheless, it is evident that whenever energy efficient appliances come into a market, they tend to have a slightly higher price that usually serves as a deterrent for many consumers. Similarly, despite the high electricity prices and people's awareness about the cost benefits from energy savings over time, consumers tend to select appliances with lower upfront costs.

However, one of the possible financial mechanisms is to provide controlled quality LED lamps to households by utilities with reimbursement of their cost via the electricity bill. In this case, the utility may have an upstream credit line from donors to finance the bulk LED purchases. Therefore, a rebate scheme can offer a form of support to eligible consumers who participate in energy savings activities, thereby reducing the cost of energy efficiency improvements such as the conversion of existing traditional lighting technologies to more energy efficient LEDs. This can be conducted together with awareness-raising campaigns on the benefits of EE products to further transform the sector. This provides both sensitization and access to EE products to enhance the needed growth and penetration of LEDs in the sector.

The proposed financial mechanism is detailed in the Subsection 3.2 of this report.

[4] Integrated Household Survey (IHS) - GBoS (gbosdata.org).

1.4.3 Measure 3. Introduce MEPS and Mandatory Labelling for Refrigerators and RACs

Enactment of Regulation Imposing MEPS and Labelling

The enactment of regulation imposing MEPS and labelling will inevitably result in banning the importation and sales of less efficient refrigerators and RACs. However, such stringent measures commence with sensitization and education regarding objectives. This is followed by the regulatory, monitoring, and verification infrastructure to enforce and facilitate the effectiveness of the MEPS and mandatory labelling. This would ensure that all refrigerator and RAC products entering the country comply with the MEPS and are labelled and certified upon entry into the country. It would be more feasible to require such equipment entering in The Gambia to be performance tested at the country of origin according to international standards and let the manufacturer/importer ensure these results are in line with the MEPS prior to shipment.

However, to discourage the importation of inefficient, non-labelled, and second-hand refrigerators and RACs, such products would have to undergo testing at accredited labs for an extra fee before being labelled and certified. Such actions would create a significant paradigm shift in the market trends for new efficient refrigerators and RACs, based on the existing energy savings potential. Similarly, this would narrow the current grey market since products coming into the country would be regulated by the MEPS and labelled.

However, there have been instances in other countries where manufacturers or importers have circumvented such measures by re-labelling their D Class refrigerators or RACs to B Class or higher to get them back on the market through countries with weak measurement and verification (M&V) infrastructure. Thus, lessons learned from other countries that have introduced MEPS demonstrate the need to take serious steps to ensure a robust M&V mechanism.

Likewise, introducing a robust regulatory, monitoring, and verification infrastructure with the required enforcements in place facilitates the effectiveness of MEPS. Similarly, it must be preceded by awareness raising and sensitization. However, an in-depth survey of electricity end uses in households across the country can be conducted to establish a baseline. This can be followed by a partially funded replacement campaign based on the results of the survey and impact indicators. Similarly, based on the survey indicators, a replacement campaign can be conducted with VAT incentives for distributors.

1.4.4 Measure 4. Mechanism to Accelerate the Replacement of Old Inefficient Refrigerators and RACs

Brief Description

The mechanism for accelerating the replacement of the energy using equipment and appliance stock provides incentives to encourage consumers to upgrade and properly dispose of their aging appliances. Incentives are essential policy tools to move the market toward energy efficient products.[5] They offer a favourable complement to mandatory standards and labelling policies by accelerating the market penetration of energy efficient products that are above equipment standard requirements and by preparing the market for future increased mandatory requirements.

Concretely, incentive programs can sway purchase decisions and, in some cases, production decisions and retail stocking decisions toward energy efficient products. Such programs are structured according to the local regulatory environment, financing models, how incentives are targeted, and who administers them. Any agency can launch such programs.

This mechanism must serve to overcome the risks perceived by different stakeholders to facilitate investments in energy efficient equipment and appliance programs. Efficient equipment and appliances are typically more expensive on a first-cost basis and less expensive throughout the product life cycle. Financing schemes are thus valuable tools for increasing and accelerating the market adoption of more efficient products.

This mechanism is well adapted for implementation in The Gambia to accelerate the market transformation toward more energy efficient refrigerators and RACs; they represent the highest energy savings potential in the residential sector in the country.

It is worth noting that, once inefficient models are in place, it is difficult to get households to replace them with more energy efficient models until the old models break or wear out. Furthermore, used refrigerators and RACs constitute about 50% of appliances Gambian households.

Therefore, proposing a financing scheme to consumers, including incentives or tax incentives (i.e. VAT reduction), a rebate scheme, and a consumer loan facility, many would be willing to replace old units especially with a great reduction in prices for EE appliances while ensuring the high quality of certified products.

One of the interesting examples of this type of support mechanism that could be duplicated in The Gambia is the ***Ecofridges initiative in West Africa***, which is presented in the box below.

[5] SEAD Incentives Working Group. (August 2013). A Global Review of Incentive Programs to Accelerate Energy Efficient Appliances and Equipment. Retrieved from https://ies.lbl.gov/sites/all/files/lbnl-6367e.pdf.

An Example Illustrating the Use of this Instrument: ECOFRIDGES Initiative in West Africa[6]

ECOFRIDGES is a joint project by UNEP's United for Efficiency initiative (U4E), the Governments of Ghana (Energy Commission, Environmental Protection Agency) and Senegal (Agence pour l'Economie et la Maitrise de l'Energie, Direction de l'Environnement et des Etablissements Classées), and the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE). ECOFRIDGES is aimed at introducing onto the market highly energy efficient products that are available at scale in other markets but not yet in West African countries.

The program is aimed at accelerating the switch to energy efficient and climate-friendly refrigeration and air conditioning solutions in the region. After an extensive market assessment, the key findings were used to inform the design of the respective ECOFRIDGES financial mechanisms: Green On-wage financing in Ghana and On-bill financing in Senegal. Both financial mechanisms have been operationalized and piloted with selected partner banks, technology providers, and the power utility in Senegal.

Business Model:

In Ghana, ECOFRIDGES Green On-wage financing (GO) is a bank loan product designed to address the short to medium term financing needs of public and private sector employees through salary deductions to support the replacement of used but operational equipment with a certified cooling system solution without the burden of upfront investment and the need for collateral. The employer is the guarantor of the salaried customer's loan, and the mechanism reduces the need for stringent credit assessments and collateral.

In Senegal, ECOFRIDGES On-bill financing offers consumers the option to finance purchases through monthly payments on their electric utility bills or other channels that meet the country-specific needs. A simple review of bill payment history, income, and other basic information will be used to determine financing eligibility. A financial tracking tool will be used to follow repayment progress and program operations to ensure the viability of the mechanism over time.

Impacts:

ECOFRIDGES is building on lessons learned from Ghana and drawing inspiration from other successful policies and financial mechanisms to link its work with activities underway by ECREEE to spur the adoption of superior cooling solutions in the region. ECOFRIDGES includes complementary components, notably the proper disposal of used appliances, product testing, M&V, policy considerations, and awareness campaigns. As of 31 January 2022, ECOFRIDGES has resulted in:

- 1,471 new certified energy efficient and climate-friendly domestic refrigerators and RACs sold.
- USD 0.9 million in mobilized finance.

1.4.5 Measure 5. Introduce Labelling and MEPS for Other Electrical Appliances

This means establishing MEPS and labelling for home electrical appliances (telecommunication devices, fans, boilers, TVs, solar and electric water heaters, etc.). It may seem premature to address household appliances when The Gambia has such a low level of penetration of household appliances. Once inefficient models are in place, it is difficult to get households to change them for better, more energy efficient models until the old models break or wear out, which can take a long time. If the Gambian economy expands at the expected 2.5% rate, the demand for appliances will sharply increase.

[6] https://energy-base.org/projects/ecofridges-initiative-in-west-africa/.

Standards and labels are cost-effective and powerful tools to transform the market for these products so that only energy efficient models are purchased and installed. The GoTG should seek regional cooperation on S&L with other ECOWAS countries and look into existing S&L projects upon which to model its own S&L program.

Experience shows that, as energy efficient appliances become available, their slightly higher price serves as a deterrent for many, if not most, consumers to purchase them. Even with The Gambia's high electricity prices and people's awareness that energy efficient appliances will pay for themselves through energy savings over time, consumers tend to select appliances with lower upfront costs. Therefore, the development of a program providing both incentives and financing is needed. For example, a program could be developed to provide both a rebate for the purchase of an energy efficient appliance and a low-interest loan allowing a household to repay it over time on its electricity bill.

Even with the adoption of MEPS for household appliances, consumers will tend to purchase cheaper inefficient appliances if there is no program to address high upfront costs. If the inefficient models are banned and if there is a significant price gap between them and energy efficient models, an informal market could develop for those inefficient models. In fact, an informal market could develop even with incentives and financing, so the situation should be monitored to devise policies and actions to eliminate or at least mitigate such a market.

1.5 Productive Sector

The measures described below should be compiled under a unique program for the productive sector and should be introduced through a decree of the EE law. That program will mostly cover large energy consumers as well as large and medium business. Since the gender gap is still significant in the productive sector, a gender component should be included to ensure women's empowerment in facilities and mostly women's involvement in informal enterprises. Concerning the informal sector, policy interventions could be aimed at addressing the factors hindering women entrepreneurs' transition to the formal economy since remaining in the informal economy has negative repercussions on productivity, growth, and social vulnerability.

A couple of interesting projects in the productive sector are Solar Sister in Africa that provides essential services and training to enable women entrepreneurs to build sustainable businesses in their own communities and an Asian Development Bank (ADB) loan that combines gender-sensitive institutional capacity building with opportunities for women's participation in customer service functions and user-education activities in the energy sector.

1.5.1 Measure 1. Introduce Mandatory Energy Audits for Large Energy Consumers

Enactment of Regulation for Large Energy Consumers

In a bid to achieve the objectives of the strategy, an enactment of regulation is needed to ensure large energy consumers conduct periodic energy audits and submit annual energy report. It is proposed that such a measure begin with sensitization and education to obtain their buy-in. Subsequently, ensure the MV&E infrastructure is in place to facilitate the effectiveness of mandatory energy audits. This would also ensure that all large energy consumers conduct periodic energy audits and prepare annual audit reports.

However, like in most developing countries, introducing EE measures such as energy audits for large energy consumers would require technical support to build the capacity of energy managers and auditors. Moreover, there is no availability of certified professionals in both these specialized areas. Therefore, it is essential for government, with the support of donor partners, to facilitate training for such areas of need. These can be in the form of fully funded training provided to large energy consumers and energy service companies (ESCOs) as an incentive to promote the implementation of EE measures.

Similarly, in a bid to facilitate the implementation of EE measures presented in annual energy audit reports, government incentives would be essential to ease high EE investment costs, thus making EE more attractive. This can be considered as a good EE financial strategy to support energy audits for large energy consumers.

Design an Incentive and Financial Mechanism to Support the Implementation of EE Measures and Investments

It would be essential to design an incentive and financial mechanism to support the implementation of EE measures and investments. It should be noted that the transition to an energy efficient company comes with great investment costs. Moreover, the implementation of audit report recommendations would require substantial investments; thus, financial support would be needed to encourage such industries to participate in this process.

Furthermore, based on the experiences of other countries, there is a need for affordable EE financing and financial incentives to facilitate the investments required to reach the ultimate goals of the NEES.

Such example is the 12L Tax incentive in South Africa[7] that creates an opportunity for businesses to implement energy efficiency savings. This EE savings allow for tax deductions of 95c/kWh saved on energy consumption. For consumers to claim the deductions, a comparison of verified and measured EE savings in kWh is made against the baseline measurement over the implementation/assessment period (12 months). The baseline measurement and savings are usually verified and measured by an accredited M&V body. These are all possible financial initiatives that can be tailored to suit the financial support needed to promote EE investments in The Gambia.

[7] 12 EE Tax Incentives Workshops (sanedi.org.za).

Nonetheless, alternative commercial financing does exist in The Gambia, but collateral requirements such as equity requirements, interest rates, and other terms act as barriers to investment. Therefore, government incentives would be needed to better facilitate EE investment and make it attractive. This can be considered as one of the most optimal EE financial strategies to support audits for large energy consumers; nonetheless, there is still a need for affordable EE financing that does not create an unnecessary administrative burden for energy users.

Technical Support and Training on Conducting Energy Audits for Energy Auditors and Energy Managers

Provide technical support and training to energy auditors and energy managers on conducting energy audits in the different targeted sectors and on implementing EE measures. However, like in most developing countries, introducing EE measures requires capacity building for both energy auditors and energy managers to facilitate the implementation of such regulations. Therefore, it is essential for both government and the private sector to work with donor partners to provide funded training for such areas of need. The fully funded training can be provided for large energy consumers as an incentive to promote the implementation of EE measures.

1.5.2 Measure 2. Introduce Voluntary Adherence to Energy Management Protocols Targeting Large Energy Consumers, ISO 50001

Voluntary Agreement

Negotiating and signing voluntary agreements with large energy consumers (industries, hotels, large commercial buildings) to progressively introduce energy management systems that comply with ISO 50001 would significantly impact the energy sector. Moreover, providing technical and incentive support to signatories of voluntary agreements is equally important for the development and sustainability of the progress attained. A management-led EE program such as ISO 50001 should be developed to provide a systematic approach to industrial EE, including the ISO 50001 approach to energy audits, accompanied by promotional incentives for the implementation of improvements in large industrial firms, major hotels, and export-oriented firms.

Despite the current size of the industrial sector, it represents the second highest electricity consuming sector in The Gambia. However, the sector does not have a detailed breakdown of electricity end uses. Nonetheless, it is assumed, as in most countries, RAC, induction motors and related drives (fans, pumps, compressors, etc.) account for at least 50% of electricity consumption in the industrial sector. Electric motors and drives account for over half of all electricity consumption worldwide. Studies carried out by different researchers have demonstrated that over 50% of drive-power electricity could be saved if motor and drive systems were rendered more efficient. Thus, voluntary adherence to energy management protocols can greatly reduce energy consumption in large industries.

Technical and Incentive Support

The provision of technical and incentive support to promote EE as the main driver of the economy would have an impact on the competitiveness of products and services rendered by this sector. Thus, it will help reduce operational costs through the promotion of EE measures for the productive sector.

However, in facilitating the penetration of EE measures within the sector, technical and incentive support is needed. The design of an incentive support mechanism is required to facilitate the penetration of EE within industry through technical training initiatives for stakeholders. Furthermore, it is worth noting that most companies in the productive sector already face financial challenges, especially with COVID. Therefore, the capital investment involved in the implementation of the EE measures is mostly considered a barrier, hence the need for support in the form of capacity building or financial incentives such as a tax reduction on EE products. Similarly, to ensure the sustainability of energy efficient measures in the sector, technical support in terms of training packages is inevitable.

Nonetheless, based on the results of studies, there is also a need for affordable EE financing and financial incentives to lower the cost of investments. The alternative of commercial financing certainly exists, but the collateral requirements currently serve as barriers; these include equity requirements, interest rates, etc. Contrarily, the presence of government support in the form of EE tax incentives to promote EE measures in the productive sector would inevitably attract a lot of EE investments and promote sectoral efficiency.

1.5.3 Measure 3. Establish a Program to Improve EE in MSMEs

Technical and Incentive Support

The provision of technical and incentive support to promote generic EE measures for micro, small/medium enterprises is vital to facilitate the penetration of EE measures. It would also be important to design an incentive and financial mechanism to support the implementation of such EE measures and investments. Noting that those enterprises have limited financial capabilities, the transition into EE business will be a challenge. Similarly, to ensure the sustainability of such energy efficient measures, providing technical support for training packages is inevitable.

However, based on the experiences of other nations, there is also a need for affordable EE financing and financial incentives to reduce investment costs. The alternative of commercial financing exists, but the collateral requirements are the main barriers, such as equity requirements and interest rates. However, government incentives on generic EE measures for such enterprises would be needed to enable such EE investments. This could be considered as an optimal EE financial strategy to facilitate the technical and incentive support required by MSMEs.

1.5.4 Measure 4. Introduce MEPS for Industrial Energy Using Equipment

While MEPS are focused on banning inefficient products from the market and labelling serves to promote the use of energy efficient products, the introduction of MEPS is a powerful regulatory tool to improve EE in a cost-effective manner. The development and adoption of MEPS for industrial

energy using equipment is essential but must be preceded by awareness raising. However, sufficient data on sectoral electricity end uses are lacking. However, by taking reference from other countries, one can safely say electrical motors and their drives are the major consumer of electricity. Nonetheless, a survey of industrial energy uses is needed to confirm and obtain a clear picture of major energy end uses. This would inevitably help in establishing well-structured and targeted MEPS for energy using equipment in industries.

A MEPS program will not be effective unless country stakeholders already have some operating experience with high efficiency motors and variable speed drives (VSDs). Thus, it would be essential to provide some form of awareness raising and financing program for industries. The financing program will help firms pay the upfront costs of more expensive energy efficient motors and VSDs. However, the incentive program might specify the conditions associated in benefitting from such incentives.

1.5.5 Measure 5. Introduce a Mandatory EE Building Code for New Buildings

Population growth, urbanization, and economic development are creating rapidly increasing energy demand in The Gambia. Energy demand in the residential sector is enhanced by a rise in the standard of living, modern technologies, and desire for comfort that comes with using electronic equipment, which all contribute to increases in building energy consumption. With the current growth in the building sector, there is similar rise in energy consumption therein.

However, limiting this rise in energy consumption will have a positive impact on multiple fronts such as economic, social, and environmental. Moreover, from a broader perspective, it would inevitably ease the huge government energy expenditures to cater for other struggling sectors such as health and education. Similarly, the world and donor partners see EE as one of the best ways to foster energy security in the long term.

A national EE building code would therefore be an important step toward supporting the implementation of the NEES. It would also give EE higher priority and greater visibility in the infrastructure industry while providing a strong mandate to the EE agency to develop and implement EE programs (promotion and financing), including MEPS and labelling to support the building EE code.

Currently, across many developing countries, energy efficiency building code (EEBC) development studies are ongoing to establish technical standards for energy efficient buildings. However, there are still many barriers, especially in the implementation process taking into consideration the economic and institutional constraints of certain countries. The only way to recover the huge energy saving potential in buildings is to develop an EEBC, but it would require supporting policy measures to achieve a holistic NEES. This means incentives to promote specific measures such as VAT reductions on efficient appliances and a tax reduction for EE buildings (label above code), and/or an eco-tax on electricity consumption. Therefore, an EEBC roadmap needs to be developed to assist in the implementation of a successful EE building code.

The main activities to be conducted to succeed in designing and implementing an EEBC adapted to the Gambian context include:

- Conduct a market analysis on the construction sector and perform technical and economic analyses (typically using computer simulation tools) to assess which are the best EE measures (based on energy savings and cost-effectiveness) to include in the EEBC requirements.
- Adopt the EEBC officially as a mandatory or voluntary code after consultations with key stakeholders in the construction sector.
- Enact regulation to introduce minimum energy requirements for new buildings.
- Provide training sessions to architects and engineers in designing, planning, and implementing energy efficient and resilient building projects based on bioclimatic design principles and efficient technologies.
- Conduct massive awareness campaign targeting the multiple actors in the construction sector (e.g. developers, construction companies, building owners) on the benefits of adopting the EEBC.
- Introduce a certification scheme for new buildings to complement the EE building code, linked to an incentive mechanism for developers to improve EE in new buildings beyond the minimum requirements.

Energy Efficiency Building Code

The EEBC is a legal instrument, or overall framework, which sets the general conditions, competences, and jurisdiction, thus ensuring legal security. The different sections within the code or legal document provide technical standards and specifications. Frequent changes in such legal frameworks are unhealthy because these lead to investment climate instability and perceptions of high risk.

However, over time, changes maybe necessitated by technology, material developments, or because of a next phase in the implementation strategy. These are inevitable and therefore must be considered to ensure flexibility in the EEBC for updating without going through the entire legal endorsement procedure again.

Thus, the set-up of laws, directives, and guidelines must form an effective and flexible legal framework. Similarly, it would be essential to have one central institution in charge of the development and implementation of the EEBC; such a central body can be represented by an EE building code council.

1.5.6 Measure 6. Enact Complementary Policies to Support EE in the Productive Sector

Promote the Development of the ESCO Market

In the last 30 years, the governments of different countries have implemented a series of activities to increase the penetration of EE techniques and behaviours in their respective markets. Large numbers of those activities rely on regulatory action and incentive programs to achieve their objectives. However, a large-scale market transformation toward more efficient energy usage requires the mobilization of the private sector.

There is already a business model that emerged from the beginning of the eighties to implement EE measures on a larger scale.

Under this model, energy service companies (ESCOs) implement integrated projects for the benefit of commercial, institutional, and industrial medium size and large energy users. They can become one of the most effective tools to support government EE policies.

The objective of this measure is to prepare and develop the foundation for the future development of the ESCO industry in The Gambia.

This will include conducting the following activities:

- Identify best practices on ESCO support policies.
- Conduct a market analysis to determine the market potential for ESCOs.
- Enhance the capacities of potential future local ESCOs on implementing EE projects through the energy performance contract (EPC) approach (investment grade audits, typical EPCs, M&V plans, annual reporting on energy savings achieved).
- Develop tools and guidelines to spread the ESCO business model among key stakeholders (energy consumers, policy-makers, financial sector, energy consultants).
- Develop a certification scheme for ESCOs and their employees.
- Develop and adopt a regulatory framework for the ESCO business model and EPCs.
- Design and implement a financial support mechanism for EPCs.
- Support the implementation of pilot projects through EPCs.

1.6 Public Services

The measures described below should be compiled under a unique program for the public services sector that should be introduced through a decree of the EE law. The program should include a gender component to ensure gender gaps are considered. There are many programs and projects combining gender mainstreaming with the public services sector, for example the project funded by the Agence Française du Développement (AFD) with the support of the Covenant of Mayors in Sub-Saharan Africa (COM SSA) that analyzed gender aspects in streetlighting and published an essential guideline Gender Mainstreaming and Street Lighting for policy-makers.

1.6.1 Measure 1. Establish a National Pilot Program to Improve EE in Public Buildings

EE Policy for Public Buildings

The development of a national EE policy for public buildings is essential, recognizing the cost-effective energy savings potential in the building sector. EE policies and programs can help drive the implementation of projects to decrease energy usage during the operation of facilities/buildings where goods and services are produced and delivered. The design and development of effective EE policies suited to the needs of the economy are crucial. Similarly, it is essential to ensure policies are implemented, monitored, and evaluated to yield the desired economic benefits.

Moreover, public sector buildings should be first adopters of the building energy code and building energy label in addition to energy audits and retrofits in existing buildings. A national EE policy for public buildings will enable the government to lead by example, save energy, save money, reduce environmental impacts, create safe and healthy workspaces, and serve the public good through the adequate design, construction, maintenance, renovation, and decommissioning of the country's public buildings and facilities under its control.

As the GoTG is preparing a National Public Buildings and Facilities Policy (NPBFP) to provide a realistic framework that defines the principles, objectives, and strategies for the country's public buildings and facilities subsector, it is important that the EE policy framework for public buildings be integrated and embedded in this NPBFP.

The main objectives of the NPBFP, summarized below, are completely aligned with an EE policy framework:

- Improve the policy, legal, and regulatory framework.
- Provide a framework for government to develop and promote management policies and regulations for the effective stewardship of government public buildings and facilities, including reducing energy utilization and carbon emissions as well as protecting and conserving water in government public buildings and facilities, among others. Such a framework should also serve to assess compliance with policies and regulations and monitor gradual progress toward environmental sustainability.
- Achieve best value for money in providing and managing government public buildings and facilities.
- Strengthen public buildings and facility support structures.
- Build the capacities of government agencies, construction firms, and individuals.
- Monitor and evaluate the impacts of the NPBFP.

The Ministry of Transport, Works and Infrastructure (MOTWI) has been designated to coordinate the implementation of the NPBFP. The MoPE can work hand in hand with MOTWI and accelerate the adoption of EE measures and practices in the public sector.

Energy Efficiency in Public Office Buildings, Hospitals, and Schools Program

In a bid to develop and implement an innovative mechanism (institutional and financial) to deploy EE measures in the public sector, the GoTG should play a lead role in transforming the EE market through the deployment of pilot EE investments in public buildings such as government administrative buildings, schools, public tertiary institutions, and hospitals.

It is essential to introduce minimum EE requirements in public procurement and recommend compliance with the ISO 50001 energy management standards for all public institutions.

Likewise, an energy manager should also be appointed in each ministry, school system, and health facility, among others, to oversee EE improvements in new and existing facilities. The Ministry of Finance should finance an ISO 50001 program and ensure the subsequent implementation of EE measures at each agency, school system, etc., while accepting repayments through reduced utility budget allocations.

In addition, the GoTG should continue implementing LED lighting retrofits in government offices and public places as well as implementing MEPS and labelling for office equipment with the EEBC targeting new public buildings.

Improving EE in public sector buildings and operations helps develop the EE market for other sectors as well.

Utility-Managed EE Program

In most countries, electricity utilities currently play a major role in supporting EE improvements through demand-side management (DSM) programs. Utilities can generate significant savings at a lower price per kWh than by generating electricity from any source while ensuring a better monitoring mechanism to minimize electricity losses on the demand side. Similarly, this enables utilities to better manage the load demand profile, thereby enhancing profitability across the spectrum. Nonetheless, additional generation capacity is always needed, but DSM programs are a rapid and inexpensive manner to not only free up otherwise wasted electricity, but also supply it to other users. DSM is not exactly a financing technique because the utility (in this case NAWEC) must still find the funds to invest in EE. Rather, it is an institutional mechanism for reducing the financial burden on users to pay the full upfront cost of EE, thus allowing room for users to gradually invest in EE products over time.

However, developing a utility-driven EE measure and implementation framework enables the creation of a payment mechanism on benefits from energy savings on the DSM side. This requires ESCOs for project development and financing to notably target EE improvements in public facilities at the commencement phase. Moreover, the utility will have to enhance its capacity to handle the development and coordination of EE financing models, including on-bill finance and energy performance contracting, that are implemented by private ESCOs and product suppliers, etc. Similarly, the utility will expand its business activities to facilitate the implementation of EE programs and provide services to customers to identify, design, implement, and verify EE projects. These would require documentation on the agreed finance models to support identified projects.

1.6.2 Measure 2. Establish a Program to Improve EE in the Water Sector

In a bid to improve EE in the water sector, it is essential to establish centralized energy management systems at NAWEC headquarters and at the station level to enable the rigorous monitoring of station consumption indicators and verification of savings. The process would include, but not be limited to, optimizing the sizing of pump sets according to station needs for both domains (treated water and wastewater). It is equally essential to conduct an assessment of energy savings potential through the optimization of storage facilities and the employment of VSDs. Nonetheless, conducting a pump survey is recommended to provide data on the type, age, and model of all pumps along with their maintenance history. Older pumps should be replaced with higher efficiency models. Replacements could be financed through a budget allocation model or targeted energy service contracts with private engineering firms acting as ESCOs.

1.6.3 Measure 6. Establish a Dedicated Program for the Deployment of EE Streetlighting

A streetlighting EE program should be developed and adopted. The program will provide the necessary information to help the GoTG save energy and money in its ongoing streetlighting program expansion and retrofits.

First, an in-depth survey should be conducted to build a baseline for the streetlight network. Consequently, EE potential should be calculated in the short, medium, and long terms, and an EE streetlighting program should be developed in consultation with all relevant stakeholders.

The program should include:

- The findings of an in-depth survey on the EE potential;
- The scope of the program and the implementation phases;
- The objectives of the program;
- Governance of the program;
- Financing mechanisms including incentives, taxes, and a business model;
- Operational implementation of the program:
  - Regulatory framework (standards, technical norms and specifications, measurement protocols, etc.);
  - Awareness and communication campaigns;
  - Training for professionals;
  - Subsidy mechanisms.
- Evaluation of the program;
- Costs and benefits of the program;
- Planning of the program.

1.7 Cooking Sector

The measures described below should be compiled under a unique program for the cooking sector and should be introduced through a decree of the EE law to ensure the Clean Cooking Energy Action Plan is properly implemented. A gender aspect is already explored in the Action Plan and should be highlighted in the Gender Framework that will be included in the EE law. There are many projects combining gender aspects and the clean cooking sector: e.g. the program implemented jointly by GIZ and the Kenya Ministry of Energy, Gender Pays Off!, which is aimed at increasing access to modern cooking and lighting energy in rural Kenya.

1.7.1 Measure 1. Establish Standards and Labelling for Cookstoves

The development of cookstove standards and labelling is currently in the beginning phases in The Gambia, hence the need for a gradual and well strategized approach to guarantee quality in the industry. Similarly, the development of standards and labelling serves to ensure both producers and consumers focus on investing in cleaner and more efficient cookstoves. Moreover, S&L efforts would inevitably create a paradigm shift toward demand for cleaner and more efficient cookstoves, especially with S&L awareness-raising activities targeting consumers.

The Gambia Standards Bureau is tasked with the responsibility of developing standards with the support of relevant stakeholders. However, it would be essential to ensure that the required testing infrastructure is available for the efficient implementation of the S&L policy. Moreover, as in many developing countries, local craftsmen across the country manufacture cookstoves, thereby creating a huge challenge for the enforcement of standards.

Therefore, to better position The Gambia and ensure the efficient implementation of standards development, certifications, and conformity assessments, technical and financial support is needed. Moreover, taking into consideration the current state of the market infrastructure, the development, adoption, and enforcement of labelling standards would require conformity assessments, thereby ensuring a robust implementation system.

The conformity assessment process would include testing, inspection, and finally certification. Thus, products must be tested to ensure they meet requirements before being allowed on the market. Likewise, it would also need to be demonstrated that products meet all labelling and certification requirements.

1.7.2 Measure 2. Ensure the Continued Monitoring of Cookstove Producers to Enhance Quality

The approach to transform the cookstove and fuel market is an inherently iterative process in which early lessons learned will progressively inform the direction and weight of subsequent efforts. A robust and dedicated M&V framework should ensure compliance with standards and serve to verify the market penetration of efficient technologies in terms of:

- Objectives;
- Development process;
- Limitations;
- Indicators.

However, the M&V framework is meant to equally capture the effectiveness and efficiency of program processes, stimulate course corrections as needed to maximize desired outcomes, and measure changes across different outcome levels over time.

Thus, it is essential to hire a firm to provide technical support for the design and implementation of an M&V framework. This must be developed to envisage the evaluation frameworks and impact assessment tools that would be developed together with the MoPE and relevant stakeholders, resulting in generating a comprehensive list of indicators corresponding to each outcome in a logic model. Immediate and intermediate outcomes should be specific, measurable, achievable, relevant, and time bound and be measured diligently throughout the implementation period and beyond. The data will serve as parameters for robust, evidence-based impact modelling exercises for estimating the less measurable ultimate outcomes (change of state for the target population). Ultimately, the initiative will be aimed at assessing the extent to which climate, environment, women's empowerment, livelihoods, health, etc. are impacted by the clean cooking program.

The framework of monitoring and evaluation activities should include, but not be limited to, the following:

1 Baseline, midline, and end line household cooking surveys to capture changes in knowledge, attitudes, and practices at the consumer level;
2 Baseline, midline, and end line cookstove and fuel market surveys to capture changes at the enterprise level;
3 Routine monitoring and periodic process evaluations of implementation strength, quality control, and identification of limiting factors for the provision of immediate feedback for course-correction activities include:
   - Documentation: E.g. policy briefs, accounting ledgers/invoices, training manuals, and testing results, etc.;
   - Quantitative data collection: E.g. stove-use monitoring, stove performance tests, customer surveys, sales logs, etc.;
   - Qualitative data collection: E.g. program team interviews, customer focus groups, observations, etc.

1.7.3 Measure 3. Facilitate the Market Penetration of Efficient Cookstoves and Alternative Fuel Use

In a bid to facilitating the market penetration of efficient cookstove and alternative fuel use, there needs to be accessible enterprise development funding. The majority of cookstove and alternative fuel enterprises in The Gambia do not have the investment capital (technical, financial, and operational capacity) to profitably provide efficient and cleaner cooking solutions to households, institutions, and SMEs. Enterprises require risk-tolerant and concessional funding to develop their capacity to pilot technologies and scale their operations. Moreover, their lack of a track record, low financial returns, and risks currently associated with the manufacture and distribution of cookstoves and development of alternative fuels places them in a disadvantaged position.

However, the development of a robust cookstove and fuel market is expected to be a gradual process. A phased initiative with adequate support[8] is recommended and would create a market that

[8] Access to grants such as enterprise development grants, technology innovation grants, women's empowerment grants, and carbon credit certification grants would create the enabling environment for market penetration and sustainability.

both meets the needs of the population and addresses the potential challenges of the transition. Similarly, it is essential for the GoTG to make the Gambia Renewable Energy Center (GREC) operational for a more effective intervention/implementation of RE/EE arrangements, commitments, and initiatives. Moreover, GREC would create an *enabling environment* for the market through capacity building support for government and other relevant stakeholders. The areas of intervention could include applied research, advocacy, and technical assistance in supporting policy, as well as regulation development and enforcement, which are essential to enhance sector coordination. These interventions would ensure that all market players benefit from greater coordination and a policy environment that facilitates growth and positive change.

Subsequently, there is a need to promote the production of both efficient cookstoves and quality briquettes through incentives and technical support and market decentralization with competitive pricing to encourage stakeholder buy-in. This would create synergy among actors to support the development of the market, identification and support of potentially viable cookstove and fuel enterprises, cultivate robust evidence-based market interventions, seek multi-donor funding that is ideally leveraged by private capital, seek avenues to reduce the environmental impacts of charcoal production with the introduction of alternative cooking fuels, and finally ensure the integration of women in the value chain. All this can be considered as a test and learning phase that will serve as a platform for pilots to ensure their smooth transition into the longer-term market drivers.

Behavior change communication (BCC) can certainly push the market to increase penetration of cleaner and more efficient cookstoves and fuels by awareness raising on the benefits of switching to higher-performing products, while addressing some of the barriers. Similarly, it would better facilitate market penetration by addressing consumer concerns such as durability of cleaner, efficient cookstoves likewise raise the efficiency, health and safety attributes of alternative fuels. Indeed, there are ongoing awareness raising efforts, but they are limited in impact as there has not been adequate coordinated efforts with the supply-side activities (SMEs) with labelling and standardisation. Based on experience a such awareness raising activities must have a M&E component to ensure sustainability.

Moreover, the awareness raising action plan should be a multi-channel Behavior Change Communication Campaign, a mix of mass-media, interpersonal door-to-door and small group communication, phased with supply-side interventions to promote access to standardised and labelled product across the regions. Likewise for greater impact the awareness campaign should be built on formative research or assessment to ensure that the messaging is delivered appropriately, gender-responsive and compelling to the target population. Hence the need to leverage the work of organizations that are already in communication with the target segments (including those that work specifically with SMEs and Women community groups) through women's empowerment initiatives, health activities, and environmental initiatives to integrate clean cooking messaging into their work. This would inevitably create the need platform to reach the target segments, but moreover the messaging is from already trusted sources.

Furthermore, in a bid to *drive demand*, it is essential to develop innovative models for consumer financing and thereby increase the ability to pay for higher quality stoves. Firstly, BCC would increase demand through an evidence-based approach timed to take advantage of progress on the supply side. Secondly, engagement with the UNIDO/GEF6 Clean Cookstove beneficiary to distribute cookstoves to schools and hospitals also establishes a linkage and synergetic relationship to support the sustainability of interventions. Moreover, offering technical and financial support to enterprises targeting school and hospital as well as SMEs for a transition to cleaner and more efficient fuels would inevitably drive demand.

Globally, markets have transitioned to clean cooking energy but have done so with the support of government policies and programs. Therefore, it is essential for government to take ownership over developing a long-term clean cooking strategy and policy. Nonetheless, the GoTG should be supported to implement a nationwide clean cooking policy and fully integrate clean cooking into complementary climate, environment, gender equality energy access, and health policies. This would thereby create a financing mechanism to subsidize the cost of the various tested clean cookstoves with substantial improvements and impacts on the health and livelihoods of women in communities across the nation.

2 IMPLEMENTATION SCHEDULE

The table below includes the main measures per sector, energy savings impacts, institutions responsible for implementing measures, and the timeline. A more detailed description of each measure with the abovementioned information is presented in Appendix III.

Measures are also classified as high, medium, and low priority measures based on their impacts on the Gambian EE market transformation, ease of measure implementation, and their cost-effectiveness.

2.1.1 Cross-Sector

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
Cross-sectoral	1	Legal framework for EE development	› Develop a law dedicated to the promotion of EE in all key sectors. › Start a consultative process with key stakeholders on targeted sectors to validate contents of the law and establish the timeline for approval. › Present the proposed law to the Assembly and launch the approval process for the publication of the EE law.	N/A	Ministry of Petroleum and Energy (MoPE)	The Ministry of Environment, Climate Change and Natural Resources (MECCNAR)	2022 - 2023: Design 2024: Establishment	High
	2	EE capacity building	› Hire an external expert consultancy firm to design the training plan and the communication and awareness campaign in consultation with key stakeholders.		Ministry of Petroleum and Energy (MoPE)	The Ministry of Environment, Climate Change and Natural Resources (MECCNAR)	2022 – 2023: Design 2024: Establishment	High
	3	EE communication and awareness	› Promote EE among energy end users, economic actors (including importers and distributors of equipment), and governments to increase awareness about the economic and ecological benefits offered by energy management projects.		Ministry of Petroleum and Energy (MoPE)	Ministry of Finance and Economic Affairs (MoFEA)	2022-2023: Design 2024: Establishment	High
	4	Information, monitoring, and reporting	› Develop a framework for collecting, analyzing, monitoring, and reporting on EE through the support of an energy information system and statistical data by sector. › Design a data-collection plan in consultation with key stakeholders to identify sources of information.		Ministry of Petroleum and Energy (MoPE)	-	2022- 2024: Design 2025: Implementation	High

2.1.2 Residential Sector: Lighting, Appliances, and Equipment

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
Lighting	1	Phase out inefficient lighting products and adopt MEPS for on-grid and off-grid lighting devices	› Design, develop, and implement a phase-out program for inefficient lighting devices › Design and implement MEPS for lighting devices	125	Ministry of Petroleum and Energy (MoPE)	National Water & Electricity Company Ltd (NAWEC) The Ministry of Environment, Climate Change and Natural Resources (MECCNAR) Ministry of Finance and Economic Affairs (MoFEA)	2022-2023: Program Design 2023-2040: Program Implementation	High
	2	Design and put in place a financial and supportive mechanism to replace inefficient lamps by LED bulbs in existing households	Develop and implement financial and supportive mechanisms to replace inefficient lighting					High
Refrigerators and RACs	3	Introduce MEPS and mandatory labelling for refrigerators and RACs	Design and implement MEPS and labelling for cooling appliances imported, assembled, and sold in the country, including MV&E and taking into consideration regional development	185	Ministry of Petroleum and Energy (MoPE)	National Water & Electricity Company Ltd (NAWEC) The Ministry of Environment, Climate Change and Natural Resources (MECCNAR) Ministry of Finance and Economic Affairs (MoFEA)	2022-2024: Program Design 2025-2040: Program Implementation	High
	4	Mechanism to accelerate the replacement of old inefficient refrigerators	Develop and implement financial and supportive mechanisms to replace inefficient cooling appliances					Medium
Appliances and Equipment	5	Introduce labelling and MEPS for other electrical appliances	Design and implement MEPS and labelling for other household appliances imported, assembled, and sold in the country, including MV&E and taking into consideration regional development					High

2.1.3 Productive Sector

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
Industry, hotels, and commercial buildings	1	Introduce mandatory energy audits for large energy consumers	› Encourage and incentivize large energy consumers to conduct periodic energy audits and reporting › Provide technical support and training on conducting energy audits to energy auditors and energy managers › Optimize the electric consumption of motors, air compressors, industrial refrigerators, air-conditioners, and lighting › Optimize the power factor and subscribed power	86	Ministry of Petroleum and Energy (MoPE)	The Gambia Chamber of Commerce and Industry (GCCI) The Ministry of Environment, Climate Change and Natural Resources (MECCNAR)	2022-2024: Program Design 2025-2040: Program Implementation	High
	2	Introduce voluntary adherence to energy management protocols targeting large energy consumers, ISO 50001	› Negotiate and sign voluntary agreements with large energy consumers to progressively introduce energy management systems that comply with ISO 50001 › Provide technical support and training on conducting energy audits to energy auditors and energy managers › Design an incentive and financial mechanism to support the implementation of EE measures and investments					Medium
	3	Establish a program to improve EE in MSMEs	› Design an incentive and financial mechanism to support the implementation of EE measures and investments › Provide technical support and training to					High

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
			energy auditors and energy managers on conducting energy audits in the different targeted sectors and on implementing EE measures › Provide technical and incentive support to promote generic EE measures for micro, small/medium enterprises › Enact regulation imposing MEPS for industrial energy using equipment, including MV&E › Enact regulation to introduce minimum energy requirements for new buildings, including public buildings					
	4	Introduce MEPS for industrial energy using equipment	› Enact regulation imposing minimum energy efficiency performance for industrial energy using equipment, including MV&E					Medium
	5	Introduce a mandatory EE building code for new buildings	› Design an incentive and financial mechanism to support the implementation of EE measures and investments › Enact regulation to introduce minimum energy requirements for new buildings › Introduce a certification scheme for new buildings in addition to the EE building codes linked to an incentive mechanism for developers to improve EE in new buildings beyond the minimum requirements › Optimize the consumption of air-conditioning and lighting devices					Medium

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
			› Establish an energy management system by setting up an energy metering system					
	6	Complementary policies to support EE in the productive sector (ESCOs)	› Introduce a certification scheme for new buildings in addition to the EE Building Codes linked to an incentive mechanism for developers to improve EE in new buildings beyond the minimum requirements					Medium

2.1.4 Public Services

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
Office buildings, hospitals, and schools	1	Establish a national pilot program to improve EE in public buildings	› Design a dedicated EE program targeting public buildings, including office buildings, hospitals, and schools › Design and implement an innovative mechanism to deploy EE measures in the public sector › Introduce minimum EE requirements in public procurement › Under the EEBC targeting new buildings, introduce a high level of EE requirements for new public buildings	13	Ministry of Petroleum and Energy (MoPE) The Ministry of Transport, Works and Infrastructure MOTWI	Ministry of Finance and Economic Affairs (MoFEA)	2022-2023: Program Design 2024-2040: Program Implementation	High
Water	2	Establish a program to improve EE in the use of	› Replace old pumps with more efficient units › Optimize the sizing of pump sets according to station needs › Install variable speed drives	3	Ministry of Petroleum and Energy (MoPE)	National Water & Electricity Company Ltd (NAWEC)	2022 – 2023: Program Design	High

Subsector	N	Measure	Actions	Energy Savings by 2040 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
		electricity in the water sector	Establish centralized energy management systems at NAWEC headquarters and at station level to enable rigorous monitoring of station consumption indicators and verification of savings				2024 – 2040: Program Implementation	
Streetlighting	3	Establish a dedicated program for the deployment of EE streetlighting	› Replace existing SHP and HPL lighting lamps with LED lamps › Use high-efficiency luminaries › Install streetlighting voltage regulators	5	Ministry of Petroleum and Energy (MoPE)	› National Water & Electricity Company Ltd (NAWEC) › The Ministry of Environment, Climate Change and Natural Resources (MECCNAR) › Ministry of Transport, Works & Infrastructure › National Roads Authority (NRA)	2022 – 2023: Program Design 2024 – 2040: Program Implementation	High

2.1.5 Cooking Sector

N	Measure	Actions	Energy Savings by 2030 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
1	Develop standards and labelling for cookstoves to guarantee quality in the long term	› Conduct an in-depth assessment of the cooking sector nationwide › Develop standards and labelling for cookstoves to guarantee quality in the long term › Establish market surveillance › Develop a monitoring and evaluation framework	N/A	Ministry of Petroleum and Energy (MoPE)	The Gambia Standards Bureau (TGSB)	2022 – 2025: Development and Implementation	High
2	Ensure the continued monitoring of cookstove producers to enhance quality	› Hire a firm to provide technical support for design and implement an M&V framework › Design a dedicated M&V framework to ensure compliance with standards and verify the market penetration of efficient technologies › Engage key stakeholders in the development of the M&V framework	N/A	Ministry of Petroleum and Energy (MoPE)	The Ministry of Environment, Climate Change and Natural Resources (MECCNAR)	2023 – 2027: Development and Implementation	Medium
3	Facilitate the market penetration of efficient cookstoves and alternative fuel use	› Increase efforts of the RE Fund and employ a more proactive approach to reach stakeholders and inform them on the availability of the Fund › Make GREC operational for a more effective response in interventions/implementation of RE arrangements › Support and promote quality briquette production through incentives and technical support › Engage with the UNIDO/GEF6 Clean	N/A	Ministry of Petroleum and Energy (MoPE)	Ministry of Finance and Economic Affairs (MoFEA)	2027-2032: Development and Implementation	High

N	Measure	Actions	Energy Savings by 2030 (GWh)	First Responsible Party	Second Responsible Party	Timeline	Priority
		Cookstove beneficiary for their planned distribution of cookstoves to schools and hospitals › Collaborate with PURA together with the Ministry of Gender, Children and Social Welfare and its ancillary departments and relevant women's groups to engage in a medium to long-term program on promoting the use of EE in everyday household products › Create a financing mechanism to subsidize the cost of testing various clean cookstoves with substantial improvement and impact on the health and livelihoods of womenfolk in communities across the country					

Priority of the EE Measures	Description
 High	Measures that meet the following are classified as high priority: ▪ Have a large impact on the Gambian EE market transformation in the short term. ▪ Are easy to be implemented and are very cost-effective.
 Medium	Measures that meet the following are classified as medium priority: ▪ Have a medium impact on the Gambian EE market transformation. ▪ Are complex to implement.
 Low	Measures that meet the following are classified as low priority: ▪ Have a limited impact on the Gambian EE market transformation. ▪ Are very complex to implement in the current Gambia context.

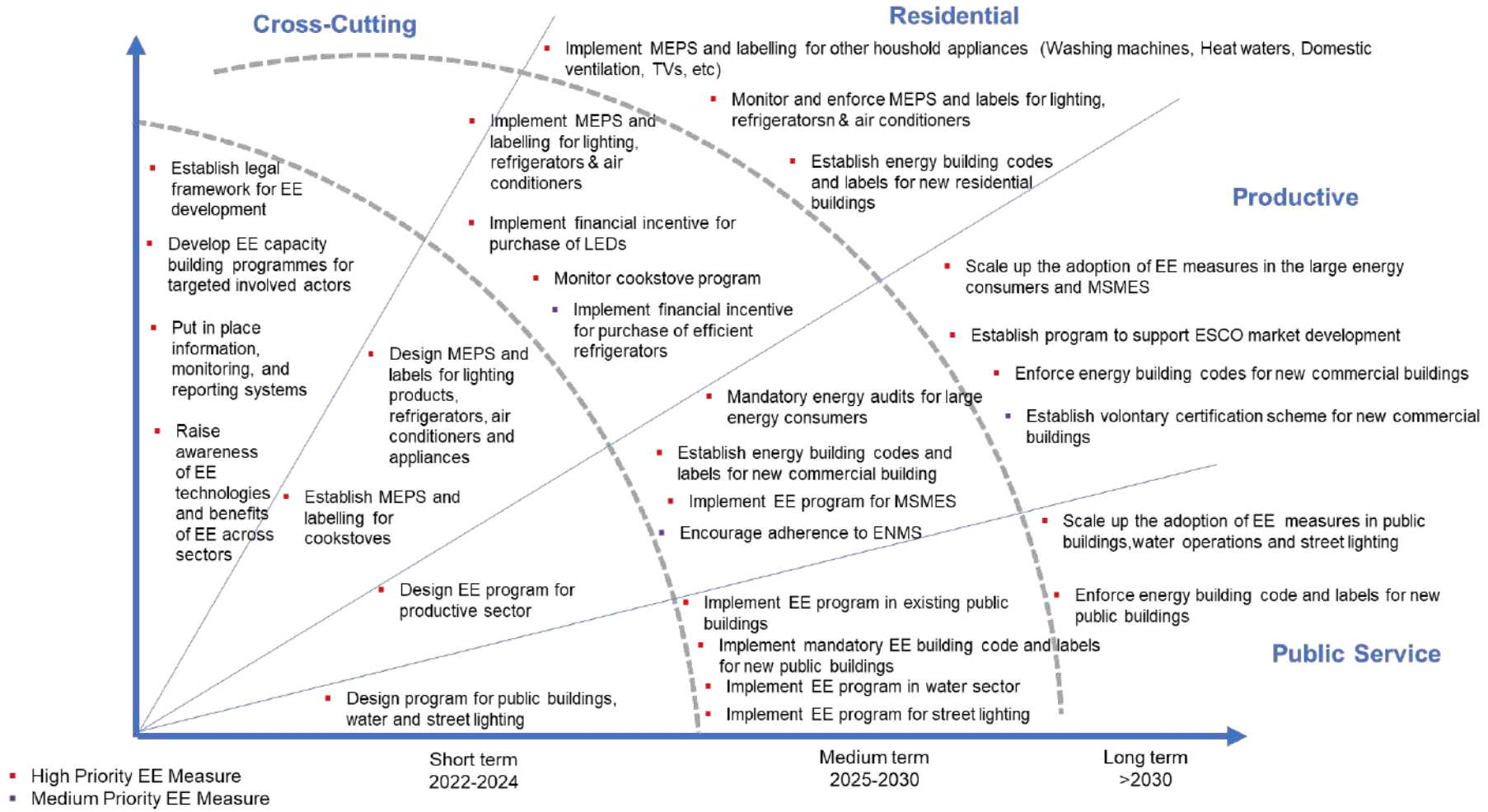

Figure 9: Schedule of EE Measure Implementation

3 IMPLEMENTATION ROADMAP

3.1 Investment Estimates

3.1.1 Total Program Investment Cost

Over the 2022-2040 period, the total investment cost of the proposed program is estimated at **approximately 96 million dollars (2021 value)**, which would represent around 5% of the country's 2020 GDP. This investment cost includes the replacement of measures at their end-of-life cycle.

The following figure presents the distribution of this investment cost over the sub-periods until 2040:

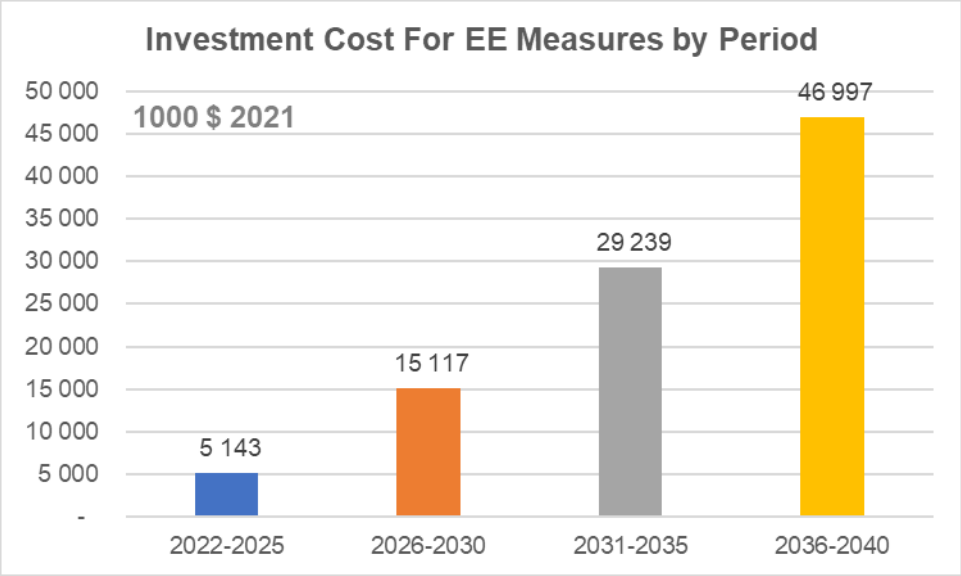

Figure 10: EE Program Investment Cost by Sub-Period

3.1.2 Technical Assistance Costs

To facilitate the mobilization and implementation of the investment, a technical assistance program should be set up targeting the GoTG as well as the main stakeholders involved to the program.

The objective of this technical assistance program is to assist The Gambia in setting up the necessary reforms facilitating the implementation of the proposed EE investment program. These reforms will cover, among others, the following aspects:

- The establishment of an institutional framework favourable to the development of EE;
- The design and implementation of the appropriate regulatory reforms allowing the creation of a dynamic EE market in the country;
- The development of financial engineering and mobilization of the necessary funds for the implementation of the proposed investment program;
- Capacity building of the various actors involved and increasing the level of technical and EE managerial expertise;
- The development and implementation of an EE awareness strategy, etc.

The cost of this technical assistance is estimated at around **4 million dollars** to be implemented mainly during the 2022-2030 period and broken down as follows.

	k$
Assistance to the ministry and stakeholders	600
Energy audits and technical studies	1,000
Financial mechanism set-up and operationalization	600
Project management and planning	600
Capacity building	400
Awareness	800
Total	**4,000**

In this case, the total cost of the proposed EE program will be around 100 million dollars, including both technology investment costs and technical assistance costs.

3.1.3 EE Investment Program by Sector

The following table presents the investment by sector according to the different sub-periods:

Table 12: EE Investment Program by Sector (k$ 2021)

Sectors	2022-2025	2026-2030	2031-2035	2036-2040	Total 2022-2040
Residential sector	3,800	10,007	17,219	24,067	**55,092**
Productive sector	965	3,987	9,703	18,534	**33,189**
Public services	378	1,123	2,317	4,397	**8,215**
Total	**5,143**	**15,117**	**29,239**	**46,997**	**96,496**

As noted in the following chart, the residential sector represents the largest share (around 57%) followed by the productive sector (34%) and then the public services sector (9%).

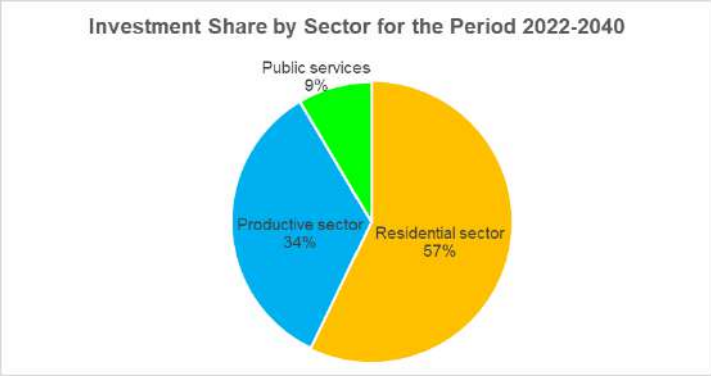

Figure 11: Share of EE Program Investment by Sector

Residential Sector

In the residential sector, three main EE measures are expected to be implemented:

- Progressive generalization of efficient lighting (LED);
- Introduction of MEPS for refrigerators;
- Introduction of MEPS for air conditioners.

The following table presents the targets for each measure by 2040.

Table 13: EE Program Targets in the Residential Sector

	Units	Target by 2040
Efficient lighting (LED)	LED park (unit)	3,168,000
Efficient refrigerators	Efficient refrigerator park (unit)	163,500
Efficient air conditioners	Efficient ACs park (unit)	175,500

Based on these targets, the total investment cost of EE measures in the residential sector amounts to around 55 million dollars (2021 value) over the 2022-2040 period, mainly driven by investments in the distribution of efficient LED lighting, as outlined in the table below.

Table 14: EE Program Investment in Residential Sector by Sub-Period (k$ 2021)

	2022-2025	2026-2030	2031-2035	2036-2040	Total 2022-2040
Efficient lighting – LED	2,638	4,982	7,544	8,317	**23,479**
Efficient refrigerators	975	3,525	5,213	7,050	**16,763**
Efficient air conditioners	188	1,500	4,463	8,700	**14,850**
Total	**3,800**	**10,007**	**17,219**	**24,067**	**55,092**

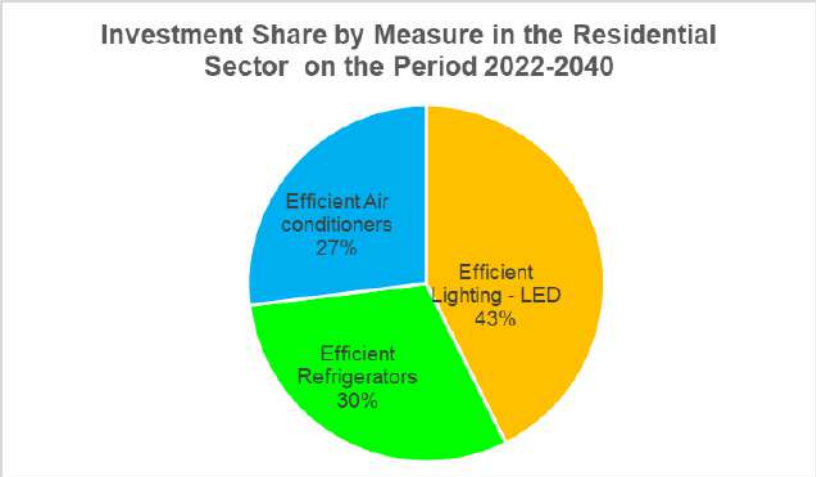

Figure 12: Share of EE Program Investment in the Residential Sector by Type of Measure

As mentioned below, the investment cost includes the costs of replacing efficient equipment at their end-of-life cycle. Finally, the following assumptions, based on international practices, were adopted for the estimation of the investment cost.

Table 15: Main Assumptions for the Estimation of Investment Cost in the Residential Sector

	Main Assumptions
Lifetime of equipment	
LED	10 years
Efficient refrigerator	10 years
Efficient air conditioner	10 years
Average cost	
LED (good quality)	$5/lamp
Efficient refrigerator (additional cost compared to very low efficient refrigerator)	$75/unit
Efficient AC (additional cost compared to very low efficient AC)	$100/unit

For efficient refrigerators and ACs, only the incremental costs compared to poor energy performance equipment dominating the Gambian market today are considered.

Productive Sector

The main measures of the EE program in the productive sector are:

- EE in industries based on actions to be identified through energy audits;
- EE in hotels, including proposed actions based on energy audits;
- EE in commercial buildings based on energy audits.

The following table presents the target number for each measure by 2040.

Table 16: Target Number per Sectoral Measures

	Units	Target by 2040
EE measures in industries	Number of units	1,216
EE measures in hotels	Number of units	70
EE measures in commercial buildings	Number of units	35,370

The total investment cost of EE measures in the productive sector is estimated at around 33 million dollars (2021 value) over the 2022-2040 period, mainly driven by EE investments in industries and commercial units, as outlined in the following table.

Table 17: EE Program Investment in the Productive Sector by Sub-Period (k$ 2021)

	2022-2025	2026-2030	2031-2035	2036-2040	Total 2022-2040
Industries	241	1,552	4,592	9,388	**15,773**
Hotels	395	1,079	1,739	2,646	**5,858**
Commercial buildings	330	1,357	3,372	6,499	**11,558**
Total	**965**	**3,987**	**9,703**	**18,534**	**33,189**

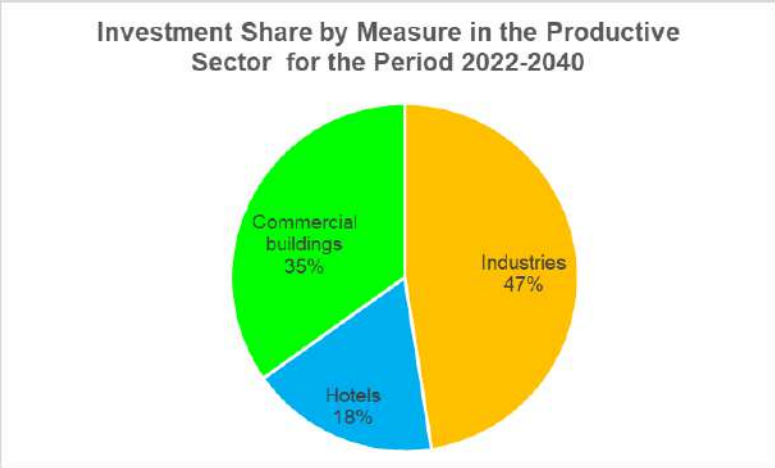

Figure 13: Share of EE Program Investment in the Productive Sector by Type of Measure

The assumptions outlined in the table below are based on the results of audits conducted in the different Gambian sectors and complemented by international feedback; they were used to estimate investment costs in the productive sector.

Table 18: Main Assumptions for the Estimation of the Investment Cost in the Productive Sector

	Main Assumptions
Lifetime of the EE measures	
EE in industry	5 years
EE in hotels	5 years
EE in commercial buildings	5 years
Average cost	
EE in industry	$280/MWh/year
EE in hotels	$300/MWh/year
EE in commercial buildings	$150/MWh/year

Public Services

As mentioned above, the EE program for public services is composed of three types of measures:

› EE measures in public buildings;

› EE measures in water sector (drinking water pumping units);
› EE measures public lighting.

The recommended program for the public services sector foresees the following target for each type of measures by 2040. The following table presents the target number for each measure by 2040.

Table 19: Target Numbers per Each Measure by Sector

	Units	Target by 2040
EE measures in public buildings	Number of buildings (units)	1,826
EE measures in drinking water pumping units	Energy consumption targeted by EE measures in 2040 (GWh)	20
Efficient public lighting	Number of LED lamps	7,522

The total EE program investment cost is estimated at approximately eight million dollars (2021 value) over the 2022-2040 period, as presented in the following table.

Table 20: EE Program Investment in the Public Services Sector by Sub-Period (k$ 2021)

	2022-2025	2026-2030	2031-2035	2036-2040	Total 2022-2040
Public buildings	61	310	898	1,947	**3,216**
Water pumping	110	524	759	1,121	**2,515**
Public lighting	206	289	660	1,329	**2,484**
Total	**378**	**1,123**	**2,317**	**4,397**	**8,215**

As illustrated in the graph below, this investment cost is split almost equally between EE measures in public buildings, efficient public lighting, and EE in drinking water pumping.

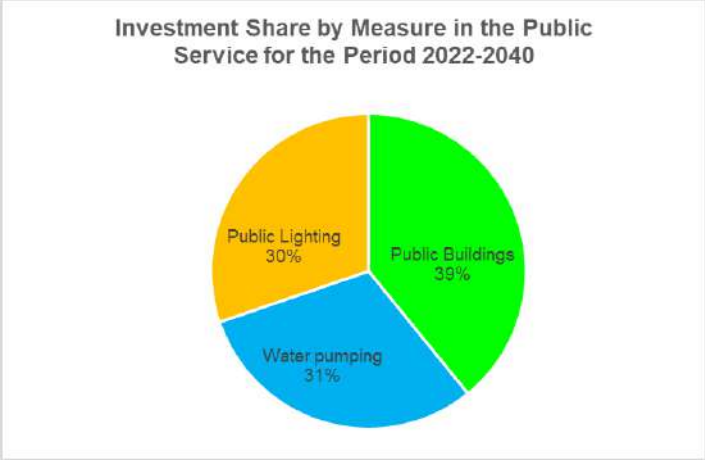

Figure 14: Share of EE Program Investment in the Public Services Sector by Type of Measure

The main assumptions considered for the estimation of this investment cost are presented in the following table.

Table 21: Main Assumptions for the Estimation of the Investment Cost in the Public Services Sector

	Main Assumptions
Lifetime of EE measures	
Public buildings	5 years
Water pumping	5 years
Public lighting	10 years
Average cost	
Public buildings	$150/MWh/year
Water pumping	$230/MWh/year
Public lighting	$275/lamp LED

3.2 Funding and Financing Options

3.2.1 Residential Sector

In the residential sector, a total interdiction of the commercialization of incandescent lamps as of 2030 is expected. CFLs will be eliminated progressively based on its progressive loss of competitiveness compared to LED lamps. Until that time, the government can set up financial mechanism to accelerate the lighting market transformation.

One of the relevant financial mechanisms is for NAWEC to provide controlled quality LED lamps to households with reimbursements of the cost via the electricity bill. In this case, NAWEC may have an upstream credit line from donors to finance bulk LED purchases, as illustrated in the following chart.

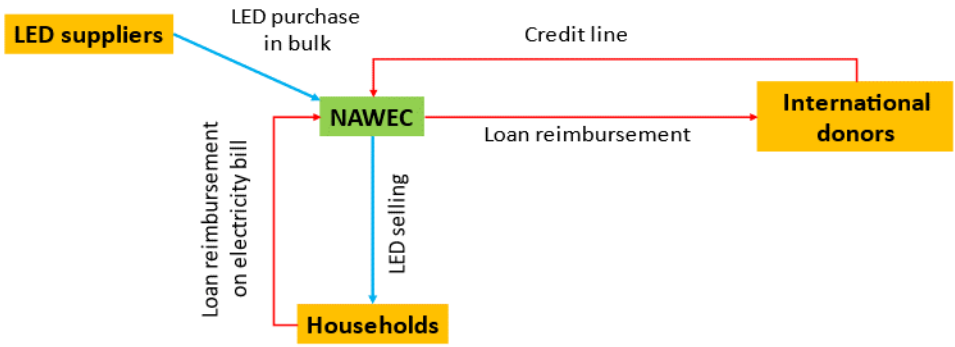

Figure 15: Proposed Financial Mechanism for the Development of Efficient Lighting in the Residential Sector

This mechanism can probably cover the investment cost up to 2030, which is around 7.6 million dollars. For efficient refrigerators and ACs, the additional cost compared to inefficient equipment will be paid by households. Low efficient appliances will then disappear from the Gambian market pursuant to the promulgation of the regulation establishing the MEPS. However, at the start of the

program (for example until 2030) and to trigger the transition of the market, this additional cost may be supported by the state or international donors within the framework of an incentive mechanism to be defined.

In that case, the EE program financial scheme for residential sector will be the following.

Table 22: Funding Structure of the EE Program in the Residential Sector

	Total Investment (M$)	Households Self-Financing (M$)	Loan Distributed by NAWEC (M$)	Public Financial Incentive (M$)
LEDs	**23.5**	15.9	7.6	
Efficient refrigerators	**16.8**	12.3		4.5
Efficient air conditioners	**14.9**	13.2		1.7
Total	**55.2**	**41.4**	**7.6**	**6.2**

3.2.2 Productive Sector

For the productive sector, EE measures are most often profitable. What blocks the implementation of EE investment is essentially a lack of access to bank loans to finance such investments, such as inadequate credit conditions, excessive demand for guarantees from banks, etc.

To overcome this, we recommend setting up a credit line with concessional conditions on interest rates and maturity, which could be financed by one or more donors. The credit line will be allocated to local banks that will be responsible for its distribution to companies based on technical criteria to be defined. The loan conditions granted to companies in terms of amount ceilings, minimum loan durations, and bank margins would be framed beforehand to prevent soft conditions from going to banks instead of to companies. For more attractiveness, the credit line may be accompanied, if necessary, by a small loan percentage bonus granted to projects after their completion (for example, 10% of the loan).

Case Study: The Financial Mechanisms SUNREF

An example of a supported green financing facility is SUNREF,[9] an AFD group green finance label that helps economic actors in developing and emerging countries seize the opportunities offered by EE and environmental transitions and encourages local financial institutions to finance them. SUNREF is a customized product that finances companies' ecological transition projects (EE and RE projects, implementation of environmentally friendly projects). The innovation of SUNREF lies in the combination of a financial approach (loans, investment grants) and a technical approach to meet the demands of partner banks and project initiators.

The financial approach provides local partner banks with long-term loans. These green credit lines are based on certain criteria (maturity of the green finance market, nature of investments, target clients) and can be allocated under favourable terms.

The technical approach supports and boosts the finance market for green investments. It helps banks finance projects and build the capacities of companies to implement strategies for an optimized use of energy and natural resources.

[9] https://www.afd.fr/en/sunref-afd-group-green-finance-label.

Given the novelty of EE for the local banking sector and Gambian companies, a technical assistant should be hired to accelerate the constitution of EE project portfolios and reassure banks about the risk assessments of projects.

The following chart indicatively presents the proposed financial mechanism.

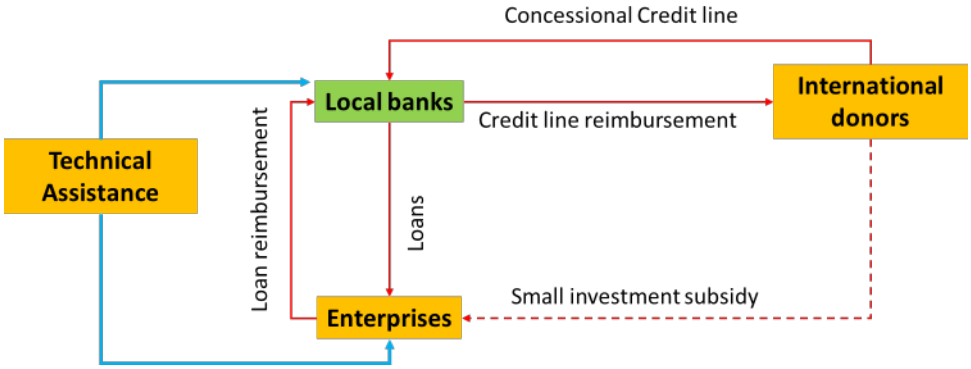

Figure 16: Proposed Financial Mechanism for the Development of EE Investment in the Productive Sector

The following table indicatively presents the funding structure of the EE program in the productive sector.

Table 23: EE Program Funding Structure in the Productive Sector

	Total Investment (M$)	Enterprises Equity (M$)	Loan from Local Banks (M$)	Investment Subsidy (M$)
Industries	**15.7**	4.7	9.9	1.1
Hotels	**5.9**	1.8	3.7	0.4
Commercial buildings	**11.6**	3.5	7.3	0.8
Total	**33.2**	**10**	**20.9**	**2.3**

Finally, as mentioned above, the use of third-party investment through ESCOs can be a solution, particularly with regard to large energy consumers in industry or commercial buildings such as hotels, commercial centers, and large office buildings.

3.2.3 Public Services Sector

Financing investments in the public services sector can be financed through two different options that can also be combined:

- Public financing through the state budget, which can take out credit from international donors to cover resource needs;
- The use of third-party investments through the ESCO mechanism.

The feasibility of the first option will depend on the state of public finances and the capacity of The Gambia to incur debt from donors. If so, all of the investments (around 8 million dollars) will be financed by the state budget.

The feasibility of the second option will depend on several conditions including:

- The previous set-up of a clear regulatory framework allowing the establishment of ESCOs;
- The implementation of an M&V system according to international standards;
- The respect of EPCs by the State to reassure third-party investors as to their remuneration;
- The financial attractiveness of investments to ESCOs.

The ESCO approach is particularly recommended for EE investments in public lighting and major drinking water pumping works.

3.2.4 Summary of the Program Funding Structure

The following table presents a summary of the indicative funding structure of the proposed EE investment program.

Table 24: Summary of the Funding Structure of the EE Program (M USD)

	Total Cost	Equity	Loans	Public Budget	Donors
Households	**55.2**	41.4	7.6	6.2	
Industries	**15.7**	4.7	9.9	1.1	
Hotels	**5.9**	1.8	3.7	0.4	
Commercial	**11.6**	3.5	7.3	0.8	
Public services	**8.2**			8.2	
Technical assistance					4.0
Total	**100.6**	**51.4**	**28.5**	**16.7**	**4.0**

3.3 Impact of the EE Measures

3.3.1 Final Energy Savings

The following table presents the expected energy savings of the proposed EE program based on 2030 and 2040 horizons as well as the total over the 2022-2040 period.

Table 25: Detailed Final Energy Savings Expected from the Implementation of the EE Program

	Savings by 2030 (GWh)	Savings by 2040 (GWh)	Savings on 2022-2040 (GWh)	Savings During Measure Lifetime (GWh)
Residential sector	**82**	**310**	**1,856**	**2,620**
Lighting	52	125	1,179	1,539
Refrigerators	24	116	425	587
Air conditioners	6	69	251	494
Productive sector	**20**	**86**	**577**	**703**
Industries	7	34	207	260
Hotels	4	9	79	88
Commercial buildings	9	43	292	355
Public services	**6**	**20**	**140**	**180**
Public buildings	3	13	78	100
Water pumping	1	3	44	49
Public lighting	2	5	18	30
Total	**108**	**416**	**2,573**	**3,502**

Final energy savings amount to 108 GWh by 2030 and 416 GWh by 2040. The savings should reach more than 2,500 GWh cumulated over the 2022-2040 period and 3,500 GWh cumulated during the lifetime of the measures.

As illustrated in the following chart, the residential sector represents the largest share of cumulative energy savings over the 2022-2040 period with approximately 75% followed by the productive sector with 20% of cumulated savings.

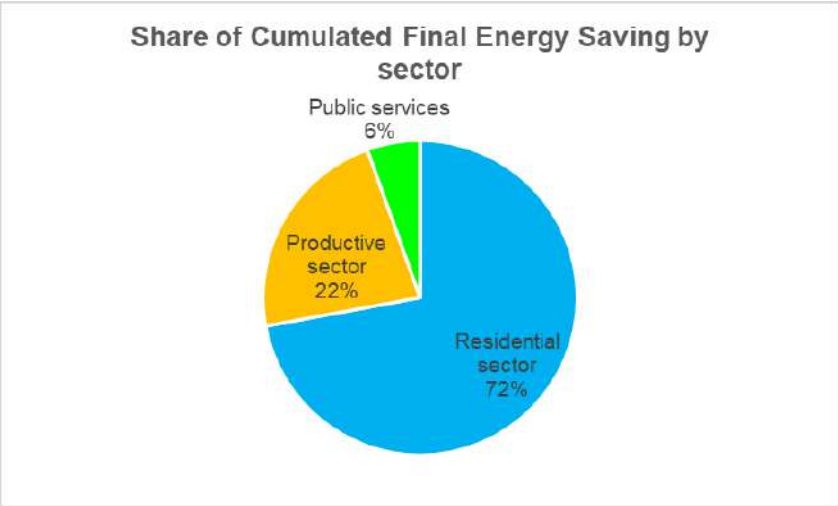

Figure 17: Share of Cumulated Final Energy Savings During the Lifetime of the Measures by Sector

3.3.2 Primary Energy Savings

The EE program will allow primary energy savings for 29 ktoe by 2030 and 112 ktoe by 2040, as presented in the following table.

Table 26:Primary Energy Savings Expected from the Implementation the EE Program

	Savings by 2030 (1,000 toe)	Savings by 2040 (1,000 toe)	Savings on 2022-2040 (1,000 toe)	Savings During Lifetime (1,000 toe)
Residential sector	22	84	501	707
Productive sector	5	23	156	190
Public services	2	5	38	49
Total	**29**	**112**	**695**	**946**

The cumulative primary energy savings will amount to around 700 ktoe during the 2022-2040 period and 950 ktoe during the lifetime of the measures.

3.3.3 Avoided CO_2 Emissions

The total CO_2 emissions avoided by the EE program would be around 90 $ktCO_2$ by 2030, 350 $ktCO_2$ by 2040, and more than 2,100 $ktCO_2$ cumulated over the 2022-2040 period.

Table 27: Expected CO_2 Emission Reductions from the Implementation of the EE Program

	CO_2 Mitigation by 2030 (1,000 tCO_2)	CO2 Mitigation by 2040 (1,000 tCO_2)	CO2 Mitigation During 2022-2040 (1,000 tCO_2)	CO2 Mitigation During Lifetime (1,000 tCO_2)
Residential sector	68	259	1,553	2,193
Productive sector	17	72	483	588
Public services	5	17	117	150
Total	**91**	**348**	**2,154**	**2,931**

3.3.4 Economic Impact

Cost Indicators: Levelized Cost

As outlined in the table below, the levelized cost of electricity (LCOE) saved by the proposed EE program is around $31/MWh,[10] which is still well below the average tariff paid today by NAWEC customers, i.e. around $180 to $190/MWh. The lowest cost per saved MWh is in the residential sector, which is around $25/MWh.

[10] Discounted cost / discounted saved quantity of electricity up to the end of life of the measures.

Also, the levelized cost per toe of primary energy saved from the implementation of the EE program is around $122/toe compared with the cost of conventional energy supplied on the international market, which exceeds $400 per toe for a barrel of oil costing $80.

Table 28: Levelized Cost per Saved Unit During the Lifetime of the Measures

	Levelized Cost of Electricity Saved ($/MWh)	Levelized Cost of Primary Energy Saved ($/toe)	Levelized Cost of GHG Reductions ($/tCO$_2$)
Residential sector	**25**	**93**	**30**
Lighting	18	68	22
Refrigerators	34	126	41
Air conditioners	37	138	45
Productive sector	**51**	**189**	**61**
Industry	66	243	78
Hotels	71	264	85
Commercial	35	130	42
Public services	**43**	**160**	**52**
Buildings	26	98	32
Water pumping	54	202	65
Public lighting	99	366	118
All sectors	**31**	**116**	**37**

The lowest cost of saved primary energy is achieved by the EE measures in the residential sector ($93/toe) and particularly in efficient lighting with a cost of around $68/toe.

As an illustration, the following chart presents the levelized cost of saved primary energy in toe.

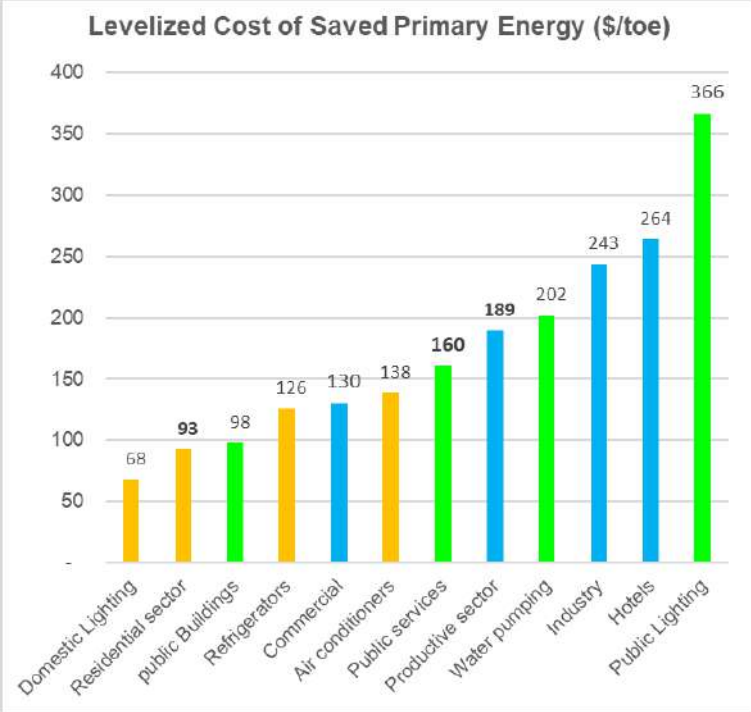

Figure 18: Levelized Cost per toe of Primary Energy Saved by the EE Program

Regarding CO_2 emissions, the abatement cost is around \$37/tCO_2. The lowest CO_2 abatement cost is achieved by EE measures in the residential sector (\$30/tCO_2) and particularly by efficient lighting (\$22/CO_2).

Net Present Value Estimations

Long-Term Oil Price Forecast Assumption

To assess the savings on The Gambia's energy bill, it is necessary to adopt a long-term oil price scenario based on the international market. One of the most recent forecasts, taking into account the impacts of the war in Ukraine, is a 2040 horizon forecast proposed by Glenloch Energy in April 2022. Beyond 2040, we have maintained the same price until 2050. This scenario is presented in the following chart.

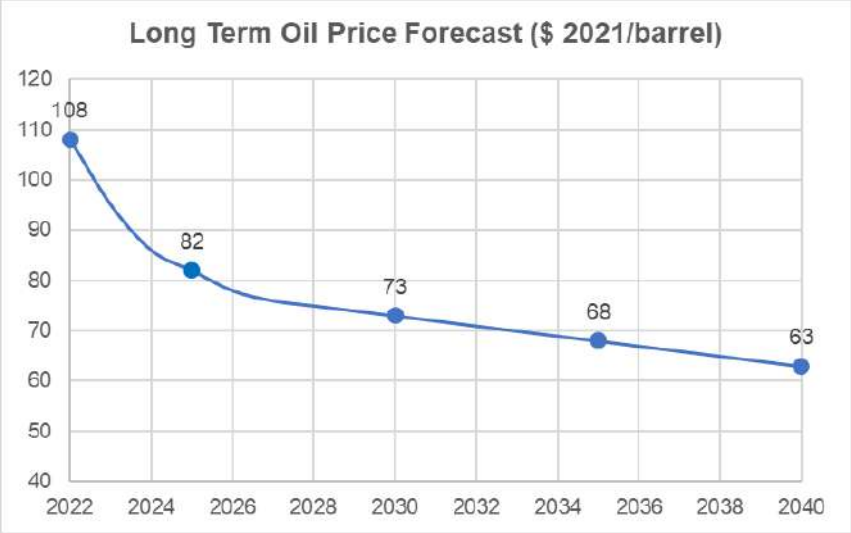

Figure 19: Forecast of Oil Price[11]

Country Energy Bill Savings

The energy bill savings for the country expected from the EE program depends on the above international oil price scenario and the saved primary energy as presented above. The following table presents the yearly investment, energy bill savings, and net cashflow resulting from the difference between the expenses and savings.

	2022	2023	2024	2025	2026	2027	2028	2029	2030
Investment cost (k$)	-818	-1068	-1412	-1846	-2211	-2602	-2976	-3368	-3959
Energy Bill Savings (k$)	0	1237	1871	2677	3434	4375	5527	6872	8477
Net Cashflow (k$)	-818	170	459	832	1222	1773	2550	3504	4518

	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040
Investment cost (k$)	-3996	-5191	-5861	-6648	-7542	-7990	-8679	-9405	-10173	-10750
Energy Bill Savings (k$)	9796	11242	12825	14551	16377	17619	18889	20181	21501	22716
Net Cashflow (k$)	5800	6051	6964	7903	9629	9629	10210	10776	11328	11966

	2041	2042	2043	2044	2045	2046	2047	2048	2049	2050
Investment cost (k$)	0	0	0	0	0	0	0	0	0	0
Energy Bill Savings (k$)	15273	13662	11880	9918	7759	5518	4504	3447	2346	1198
Net Cashflow (k$)	15273	13662	11880	9918	7759	5518	4504	3447	2346	1198

[11] Source: https://glenlochenergy.com/resources/Forecasts/2022/OMFApr22/index.php

Based on these results, the net present value for a discount rate of 5%[12] is estimated at around **USD 84 million**. This indicates that the EE program would be highly profitable for The Gambia.

[12] Discount rate adopted by IMF in the IMF Country Report No. 21/25, 2018.

4 RESULTS EVALUATION FRAMEWORK

The measurement and evaluation (M&E) of an EE program/strategy is both a real time and a retrospective process for assessing how a program/strategy performs over a specific period. The objective of M&E is to determine and document the results, benefits, and lessons learned from the EE program over that period.

From a government perspective, this information will be useful to adjust and identify future EE programs based on lessons learned.

M&E should be planned at the program design stage. Monitoring activities are mainly focused on collecting all relevant information for evaluation activities. The program evaluation usually takes place after program implementation has already been underway for some time.

Program M&E follows two basic principles:

- Improvement: Providing information on program impacts and successes in meeting targets to improve performance and help plan future programs.
- Accountability: Determining program energy savings and reporting them to the various stakeholders such as regulators, boards of directors, executives, taxpayers, etc.

There are four types of evaluation:

- Process evaluation: To understand why a program is designed the way it is and how effective and efficient it is in achieving the objectives set.
- Market evaluation: To assess program influence on the market based on both participant and non-participant feedback and to collect information to establish program gross and/or net savings.
- Impact evaluation: To determine program gross and net savings (e.g. energy savings, demand savings, and avoided emissions).
- Cost-effectiveness evaluation: To analyze cost vs. savings, which will ultimately serve to confirm whether the program is sound and should be pursued or not.

Several program impact evaluation protocols exist and are used by utilities, consultants, and electricity regulation agencies around the world to measure the efficiency and technical impacts of EE programs. These protocols can sometimes refer directly to other protocols like the International Performance Measurement and Verification Protocol (IPMVP) when discussing M&V activities in a sample of projects.

It is important to make the following distinctions about project-based M&V and EE program impact evaluation contexts.

M&V is one of several possible techniques for EE program impact evaluation. For many programs, other evaluation approaches are used, including statistical billing analyses, site visits, engineering methods, and deemed savings (see Figure 20).

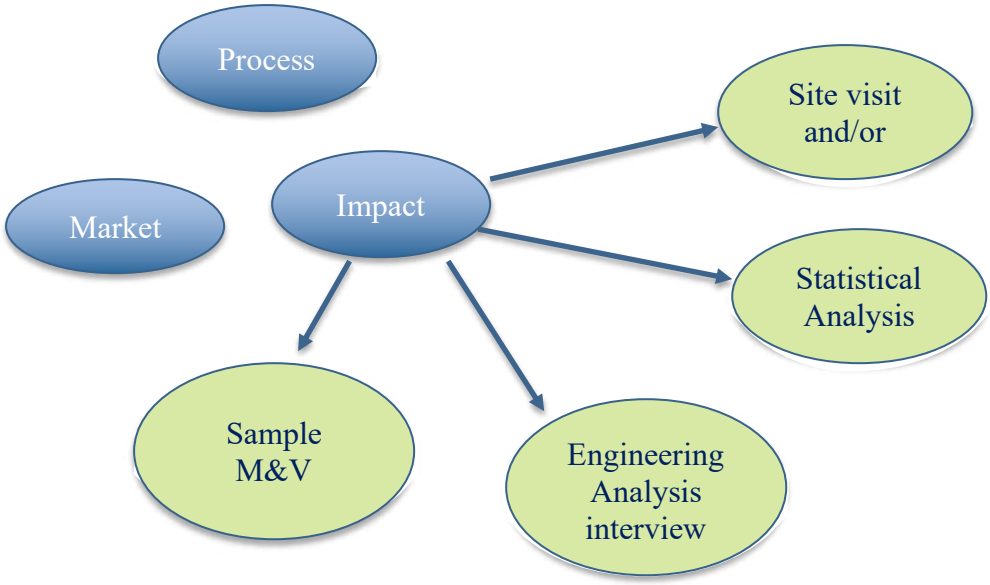

Figure 20: M&V in the Context of Program Evaluation

M&V is not necessarily applied to each individual project implemented under a given program. To reduce evaluation costs, several programs are evaluated using a stratified sample basis. However, some EE program designs are based on systematic M&V of each project. This scheme is selected when the program designer intends to ensure that financial support for the implementation of the EE project is tied to the amount of demonstrated savings. Programs in which there is no systematic M&V and evaluation is done periodically (typically every year, every two years, or every three years) on a sample of projects must rely on engineering estimates of savings to determine the financial incentive. Therefore, there is no guarantee on real program impacts.

4.1 Measuring, Reporting, and Verification (MRV) System

The action plan proposes imposing the establishment of a rigorous MRV system for all energy efficiency projects. The MRV monitoring system represents a tool for:

- Controlling and monitoring the effectiveness of the execution of actions, mobilizing investments, as well as quantifying energy savings and analyzing results;
- Guaranteeing results (for beneficiaries and for state bodies);
- Responding to results and possibly reorienting actions.

MRV will be broken down into three main activities that must be carried out at all levels:

- A parameter monitoring activity (actions, start and end dates, investments, energy savings, etc.);
- A reporting activity (quarterly and annual);
- A verification activity (internal and external) of results.

A Global Component for Monitoring Indicators

It is intended for decision-makers, providing them with quantitative indicators (macro indicators, impact indicators of EE programs undertaken, benefits for the nation, benefits for the state, benefits for companies and households, and national energy aggregates such as energy intensity) on the evolution of the Gambian's energy profile and, therefore, it provides information on the overall impact of the EE strategy and the action plan. Hence, this component represents a decision-making tool for the readjustment, if necessary, of the EE action plan. Furthermore, this component of MRV makes it possible to guarantee the adequacy between the national macroeconomic objectives and the EE policy while enabling the latter to be adapted in response to national economic events.

4.1.1 Measurement

The measurement process includes the collection of data that will allow the preparation of energy savings and GHG emission reduction reports and progress in the implementation of measures.

Since measurement normally involves the cooperation of various organizations and government departments to ensure the proper functioning of the MRV system, good coordination and communication between the stakeholders involved is encouraged to measure these parameters.

The parameters necessary to be measured to calculate energy savings and GHG emissions and to follow up on the implementation of the measures that are required by the methodology are presented in the table below.

Table 29: Parameters to Calculate Energy Savings and GHG Emissions

N°	Parameter	Description	Unit	Frequency	Source for Value Update (Current/ Proposal)	Measurement
Bottom-Up Approach (for energy savings and GHG calculations)						
1	EF_y	Emissions factor of the electricity grid	$kgCO_2e/kWh$	Annual	GHG emissions factor	ex-ante / ex-post
2	SNy,k	Number of equipment units of each type of model k disseminated in the year	#	Yearly	Sustainable purchases report	ex-ante / ex-post
3	SNh,k	Average number of equipment units of each type of model k spread over the three years prior to year y=1	#	Yearly	Sustainable purchases report	ex-ante / ex-post
4	$AEC_{BL,k}$	Annual electrical consumption of each equipment model of the baseline, recorded for each model k.	kWh/year	Yearly	Baseline to be developed	ex-ante / ex-post
5	$AEC_{PJ,k}$	Annual electrical consumption of each equipment model disseminated under project activities, recorded for each model k.	kWh/year	Yearly	Sustainable purchases report	ex-ante / ex-post

N°	Parameter	Description	Unit	Frequency	Source for Value Update (Current/ Proposal)	Measurement
Measurement Progress						
6	NI_y	Number of institutions that have adopted the measure in the year	#	Yearly	Sustainable purchases report	ex-post
7	NF_y	Number of officials who have received training for the implementation and monitoring of the measure in the year	#	Yearly	Training report	ex-post
Co-Benefits						
9	VF_y	Variation in the electricity consumption bill	GH¢/year	Yearly	It is calculated as the difference between the value of the invoice per building in year y and year y=1	ex-post
10	CEM_y	Annual energy consumption per m^2	kWh/m^2/year	Yearly	NAWEC	ex-post
11	NP_y	Number of women, girls, men, and boys who report positive impacts of the EE measures implemented (disaggregated by sex, age, and income)	#	Yearly	Survey	ex-post
12	NE_y	Number and percentage of women and men employed during the implementation of EE measures, by type of job and pay rates, and the proportion of women employed in unskilled, technical, management, and supervisory roles (disaggregated by sex and age)	#	Yearly	Survey	ex-post
13	NT_y	Number and percentage of women and men attending consultation meetings about the planning, design, or pricing of services (disaggregated by sex and age)	#	Yearly	Survey	ex-post

4.1.2 Reporting

The reporting process serves to provide measured data and information. Some key factors that characterize the reporting stage are:

- Accuracy and reliability of the information reported;
- Transparency and standardization of the reporting process.

To carry out monitoring and reporting, the use of tools that facilitate the performance of this process is proposed. As far as possible, it is recommended that a quality system be established for the control of documentation based on ISO 9001, consisting of formal support elements, such as:

- **Monitoring and Reporting Manual**: It is suggested that a Monitoring and Reporting Manual be prepared to establish a series of standardized steps on a monthly basis (or with the agreed frequency) to collect information and minimize the risk of losing continuity in the data collection when there is a change in personnel. The Monitoring and Reporting Manual will have to be developed by specialized technical personnel.
- **Format for monitoring and reporting**: The design of standardized formats for collecting information and reporting the monitored data is recommended.
- **Central database**: The system will have to have a central data storage system. Through a more detailed analysis with experts in this area, it will be possible to assess how the needs of the proposed MRV system can be covered using the available platforms and online tools.

4.1.3 Verification

Verification is the process of independently verifying the accuracy and reliability of reported information. The verification method could consist of a visit to and/or an audit of a representative sample of public institutions to check the implementation status of sustainable procurement under the NEES and/or just a review of the documents presented.

The verifier should be able to perform the calculations and verify the information provided by external sources. This third-party verification activity is different from the quality assurance and control (QA/QC) process that can be carried out by the institutions in charge of implementing the MRV system.

Depending on the parties involved, the verification can be carried out through an independent verifier, either national or international. There are designated operational entities (DOE) authorized to carry out this type of verification. Hiring a third party that is not registered as a DOE could be an alternative option to consider.

In principle, an annual verification could be considered for a previously selected sample. This would entail, among other things, the following activities.

1 Prior to verification:
   - Contacting verification companies that can provide the service;
   - Selecting the external entity to verify the mitigation actions based on previously defined criteria (e.g. costs, etc.);
   - Designating the personnel that will be in communication with the verifiers/auditors during the verification process.
2 During verification:
   - Those in charge of monitoring and preparing the records will be in charge of gathering/ providing the information requested by the verification team as well as making the changes/ corrections.

4.2 Institutional Organization

4.2.1 Identification of Key Stakeholders Necessary for the Development and Implementation of the MRV System

The MRV function will be based on three distinct tools, namely: The monitoring of programs/actions; the specific evaluation of programs/actions; and the aggregate evaluation of the action plan. This will ensure the success and effectiveness of the program action proposed through better targeting of actions according to the results achieved and the sensitivity of each actor to the concept of EE. The MRV function is intended for MoPE/GAEE and the other actors in the process. Here, the MRV process is carried out in a formal and permanent manner, which will be ensured by a team specially dedicated to MRV within the MoPE/GAEE.

Public institutions included in the NEES implementation will report per measure and collect all the necessary information in an integrated report. Ideally, each public institution should have an institutional NEES coordinator who is responsible for preparing said report. Currently, certain institutions do not have an EE manager.

To optimize resources as much as possible, it is proposed that the different actors involved in each stage and phase of the MRV system interact with the dedicated MRV team within the MoPE/GAEE and report to them.

APPENDIX I
THEORETICAL FRAMEWORK TO ENSURE THE INCLUSION OF GENDER ASPECTS INTO RELEVANT EE OUTPUTS

Identify and Assess EE Policies and Activities to Close the Existing Gender Gaps

In the context of the Gambia, the existing framework for EE policies is the NEEAP. As mentioned earlier, the NEEAP identifies nine key areas for the EE implementation process. While there are many activities to promote women's role in EE in the area of cooking, the remaining areas do not sufficiently address gender issues as a means of closing existing gender gaps. This is problematic given the extent to which women and girls in the Gambia are disproportionately affected by energy poverty. Despite the limited focus of the NEEAP on gender equality issues, there are still possibilities to identify entry points for enhancing the key role of women and girls in EE activities to enhance production and generate energy savings to positively impact EE policies and activities.

Given the gaps identified in the EE sector in the context of the Gambia, there is a need to work closely with policymakers and other stakeholders at all stages to undertake a gender assessment of policies and activities in order to close the existing gender gaps. Working closely on all stages of a gender assessment is a critical element of the process to build ownership of the assessment results and subsequent gender-related actions[13].

Figure 21: How to Integrate Gender into EE Policies and Activities to Close Gender Gaps

Step 1: Gender Assessment

The aim of a gender assessment is to identify key gender issues, risks, constraints, and opportunities associated with a proposed energy sector initiative. In the case of the Gambia, a gender assessment of the EE sector is key for the development of a Gender Action Plan (GAP) consisting of activities and an M&E framework that will form the basis for implementation.

Data gathering and analysis on the following elements is critical in the context of the Gambia:

- The environment in which the EE policy/strategy will be implemented. There is a need to assess the existing energy policies and other policies impacting energy sector activities. EE responsibilities and mechanisms for decision-making must also be assessed in terms of the extent of their capacity to integrate gender concerns into their operations.
- Stakeholders in the EE and gender space, generally, and more specifically for the proposed strategy must also be mapped. The mapping will be important in identifying gaps, needs, and

[13] Adapted from ENERGIA.

possible interventions to promote gender responsiveness in the EE strategy. It also helps in collecting and analyzing sex-disaggregated data regarding the differing needs and concerns of women and men.

- Institutional capacity of institutions that would be important for gender-related decision-making and implementation associated with the implementation of the EE strategy.
- Other programs and initiatives already engaged in this EE area (the NEEAP in this case).
- Implications of the above analyses with respect to the EE strategy.

All these elements should be consistent with the National Gender Policy. It is hoped that the Gambian gender policy, which ended in 2020, will also go through a review process to be in alignment with the gender issues in the EE strategy.

Step 2: Gender Mainstreaming (GM)

Gender mainstreaming (GM) means the systematic inclusion of gender considerations into all levels of the project. This can be carried out in EE projects where women and men are energy consumers, producers, operators, managers, and decision-makers. GM is highly relevant for EE strategy development for a number of reasons. First, there is a recognized need to systematically consider the impact of the Gambia's EE projects on women and men and improve overall national processes towards gender responsiveness. A gender-blind EE project that does not consider the different roles, needs, opportunities, and expectations of women and men in its analysis or a given activity results in the reinforcement of gender-based discrimination. EE projects that are more aware of gender differences consider different questions in the choice of sectoral investments, such as:

- Is explicit attention given to the EE service needs of women as well as the requirements of men?
- Is there an understanding of the impact EE investment has on women and men and the environment?
- Will both men and women benefit from these investments? It has been shown that taking women's needs into account as a key variable in energy interventions makes it more likely that energy will have a significant impact on household and community poverty reduction.

GM in EE projects in the Gambia is thus critical in addressing energy poverty and promoting inclusive and sustainable development. Moreover, with women making up half of the potential talent pool in the country, making a conscious effort to invest equally in both men and women is a major advantage. A more equal society will also generate new needs and thus encourage the development of new products and services. Finally, the integration of a gender perspective into the EE strategy will ensure that existing inequalities within the context of the Gambia are addressed in a meaningful and effective way.

Step 3: Gender Action Plan (GAP)

When the gender assessment has been completed, it should inform and be integrated into the overall EE policy/strategy design. In order to ensure that gender is mainstreamed, the EE policy/strategy will be accompanied by a GAP. The GAP sets out a framework to implement the recommendations of the gender assessment and in turn ensure GM in the policy. The development of the GAP for EE

activities should therefore include a discussion of the implications of the gender assessment for the overall EE design, which may conclude in a call for adjustments of the EE design itself. The GAP may also define specific activities to be included in the scope of the EE policy/activities and request a specific budget to implement them. It also provides the basis for setting out milestones and performance indicators through a gender-sensitive M&E framework. As a caution and as has been mentioned earlier, the GAP should be consistent with the Gambia's national GAP. This is because a primary goal of the EE strategy is to promote women's empowerment and gender equality in the context of the Gambia through energy sector actions and outcomes.

Step 4: Implementation and Monitoring

An important prerequisite is for the process to directly develop concrete partnerships with women's groups in the Gambia. This is the means to strengthen implementation support as it gives recognition to the cultural and socioeconomic context. The capacity of the groups should be built through the development of relevant learning for gender focal points and staff and, where necessary, identifying additional expertise to support the EE implementation team. There should be a clear sense of how the implementation of the GAP will be supervised, in line with the agreed EE and gender M&E framework. Adequate funding for supervision, implementation support, and monitoring is also important. Progress, lessons learned, and intermediate results should also be documented through regular reporting along agreed timelines and knowledge exchange. During mid-term reviews, documenting gender-based outcomes can lead to enhancing the effectiveness of the EE strategy implementation.

Step 5: Completion and Evaluation

The initial gender assessment conducted prior to the development of the GAP provides a baseline for the impact evaluation. When reporting the final stages of the EE strategy implementation, an end of project report should include an analysis of the gender-related outcomes and impacts. The lessons of GM should be integrated into the EE operations within the Gambia and should feed into ongoing dialogue with the government and energy and EE institutions. This will ensure that findings from completion and evaluation assessments can continuously feed into the design, M&E, and actions on the ground for ongoing and future EE operations.

Recommendations to Increase the Percentage of Women Working in EE-related Activities

The evidence in the energy and gender literature points to efforts being made to get more women employed in the various energy professions[14] . This is the result of decisions made at the global level that are increasingly being translated into regional, national, and local policies. In practice, such policies have been implemented through women's increased access to science and technology education, as well as efforts by institutions and governments in implementing equal opportunity

[14] Activities on involving women in sustainable energy became prominent in 1992 after the UN Conference on Environment and Development, then the UN Conference on Women in Beijing in 1995 also gave impetus to the movement to put women's needs and concerns on the international energy agenda. Thus, it is now known that a gender perspective in EE policies, programs, and projects is a necessary component for success.

policies. But the process in the EE sector remains male-dominated, with women facing many obstacles in the sector's institutions, particularly in technical and managerial positions.

In the context of the Gambia, significant opportunities exist to reverse this situation, especially through the implementation of ECOWAS regional policies on EE and GM. The political will of the Government of the Gambia in working with the WB to develop this EE Strategy document at the national level is therefore a first step in the right direction. The following recommendation is the main focus: Energy institutions working on EE issues in the Gambia should implement actions leading to a minimum representation and participation of women of 30% in the sector. This is the minimum threshold set by the UN to make women's participation and representation in any development sector meaningful. This can be achieved through setting this target as a priority through a quota system or an affirmative action policy.

Studies have also shown that more gender-diverse institutions tend to increase productivity and innovation and generate higher net incomes, yet women are still underrepresented in the energy sector generally and the EE sector specifically. Therefore, it is recommended that policies in the EE sector focus on closing the gender gap through training, education, and employment incentives for women. This will require significant investments at the policy and institutional levels, and the Government of the Gambia must see this not only as a means of enhancing the pace for the realization of women's rights and gender equality, but also for a more inclusive development. Again, since the Gambia as a country is transitioning into more energy-efficient systems, it is critical to prioritize gender equality within the sector to capture the new opportunities for a more inclusive EE workforce. Four key job areas in the EE sector could be targeted for greater gender diversification: in the recruitment of engineers and technicians; in the construction, manufacturing, and installation field; in public and private sector leadership; and, finally, gender expertise in the energy sector. Closing the knowledge gap through an institutional gender audit to generate data for analysis related to the EE workforce will be a major step to kick-start gender diversification. This would create awareness of gender equity and the need to support women's advancement and showcase the multiple benefits of involving more women in the sector. Safeguarding measures could be put in place at two different but interrelated levels: at the institutional level and as part of reinforcing women's machinery at the implementation level of the policy.

This will ensure that, at both the institutional and implementation levels, those who enter as professionals in the sector are supported, capacitated, and protected against discriminatory hiring and promotion practices and struggles with other unfriendly workplace policies as part of the GAP. At the level of various EE projects, various low-cost interventions could be implemented to enhance women's access to EE job opportunities, such as monitoring and recording officers. When policy efforts combined with public investments continue in the long term, a level playing field will have been created for women's employment in the EE sector in the Gambia.

In the light of the foregoing the following specific recommendations are made regarding increasing women's representation in the EE sector:

- Build awareness among policy-makers of gender-energy linkages.
- Set a minimum target of 30 per cent for the participation of women in EE policy formulation by promoting transparency, accountability, and broad consultation with the poor and women

- Increase women's access to energy efficiency related information such as laws, regulations, and incentives.
- Collect and use sex-disaggregated and gender-specific data to raise awareness about women's energy efficiency needs to inform policy decisions.
- Conduct gender-responsive budgeting in the energy efficiency sector to identify the gender-differentiated impacts of public revenues and expenditures.
- Expand energy efficiency access and improve affordability for women and improve service delivery.
- Maximize opportunities for women's employment and livelihoods related to energy efficiency access.
- Promote gender equality and women's empowerment through targeted policy support that maximizes positive impacts on services used by women and girls.
- Build gender awareness of energy efficiency sector policy-makers through (a) context-specific and targeted training programs to promote gender awareness; (b) policy dialogue; (c) gender budgeting; (d) gender aware policy evaluation; (e) dialogue between government agencies, energy utilities, and women's organizations; and (f) lateral learning based on knowledge sharing of gender issues.
- Train government and utility staff (both women and men) in new energy efficiency technologies and international standards and practice.
- Adopt a gender-equal human resources management strategy based on the implementation and application of gender equity laws and regulations in the energy efficiency sector, such as increasing the percentage of female employees and managers by setting a 30 per cent minimum target; applying gender equity criteria in performance reviews of managers; establishing a gender-sensitive and secure working environment for women, such as (a) having adequate numbers of separate toilet and shower room facilities for women employees, and (b) raising awareness of all managers and employees on sexual harassment and other forms of violence against women; and establishing mechanisms to institutionalize the ongoing monitoring of gender equality principles in the workplace and to represent the interests of female and male employees in the organizations' consultative processes.
- Develop and update a sex-disaggregated project management database.
- Train project staff on effective implementation and monitoring of project gender features and project gender action plan.

In conclusion more rigorous research is needed as the engagement on EE policy and implementation processes takes off. In this connection, gender balance in research and all other teams on the EE policy development and implementation processes is a prerequisite.

APPENDIX II
ENERGY EFFICIENCY INSTITUTIONAL FRAMEWORK[15]

Model	Description	Advantages	Limitations
Broad-based national energy agency	› National energy agencies take overall responsibility for energy issues › EE is included, but is generally a minor component › Funding comes from government budget › EE roles and functions can be very broad and address the full range of policies/programs › Generally, agency has many priorities that take precedence over EE	› Greater credibility with stakeholders › Larger resource availability › Greater "clout" in obtaining government funds › Ability to obtain funds for EE programs	› Potential for EE to be low priority in funding and activities › Potential for EE function to become a "step-child" › Slower and more cumbersome decision-making › Difficulty in retaining staff
Government agency focused on EE/RE/SE	› National energy agency specialises in energy efficiency (EE), renewable energy (RE) and sustainable energy (SE) › Agency is generally created through special legislation › Funding comes from government budget › Climate change is the primary focus › EE is a high priority of these agencies › Agency has a wide range of EE responsibilities and programs	› Agency fully dedicated to EE › Commonality of goals, functions, etc. within agency › Ease of attracting dedicated staff › Combination of EE and RE, which provides greater "voice" in obtaining funding, staff and other resources	› Smaller size provides less clout › Potentially decreased emphasis on EE because RE is preferred due to its more tangible and high capital intensity › Potential for EE not to get adequate attention from top management

[15] Source: COPPER Intl. presentation on "Institutional Framework for Energy Efficiency Implementation" at the Workshop on Institutional Frameworks and Policies for Energy Efficiency Implementation, Beijing-CHINA; June 2007

Model	Description	Advantages	Limitations
	› Agency is generally part of a larger government agency or ministry		
Government agency focused entirely on EE	› Specialised energy agency focuses on EE only › Agency is generally created through special legislation › Funding comes from government budget › Agency may address all energy forms or only specific forms (e.g., electricity) › Agency has broad range of policies and programs designed to meet primary mission of improving EE › Agency may be independent or part of a larger organisation	› Focus entirely on EE; staff dedicated to EE › Ability to design programs better › Dynamic management, allowing agency to leverage funds › Possible leveraging of other resources	› Likelihood that agency will be part of a larger organisation with a focus other than on EE › Potential for agency not to be successful in obtaining resources without aggressive and dedicated top management
Independent statutory authority	› Special authority is created by the government to focus on EE (or EE/RE/SE) › Authority is independent of government bureaucracy › Authority is managed by a board of directors (appointed by the government) and generally includes non-government members › Funding may come from government budget as well as private sector › Authority may be able to leverage private sector more effectively	› Ease of operation because of independence › Ability to obtain external advice (and possibly funding) › More rapid and flexible decision-making	› Potential for agency not to be viewed as “mainstream” by stakeholders › Potential for agency not to have sufficient clout to obtain more funding › Potential for difficulty changing scope of activities and budget
Government-owned independent corporation	› Model is similar to independent statutory authority, except that instead of an	› EE focus, leading to better program design	› Potential for greater difficulty obtaining government funding (unless allocated in the official budget)

Model	Description	Advantages	Limitations
	agency, a special corporation is established › Corporation is government-owned › Corporation is managed by a board appointed by government; members include private-sector representation › Funding may come entirely from government, or some funds may be available from private sector	› Independence, that allows greater freedom and flexibility in decision making › Flexibility to obtain external input and funding	› Board generally appointed by government which must be carefully selected to represent relevant stakeholders
Public/private partnership	› Corporation is owned partly by government and private sector › Corporation is managed by a board appointed by shareholders › Funding comes from both government and private partners › Organisation may provide fee-based services to national, international and private organisations › Range of programs and activities are determined by shareholders and funding sources	› Flexibility in obtaining private sector input (and possibly funding) › Independence, that allows greater freedom and flexibility in decision making	› Potential conflicts between public and private perspectives › Potential for greater difficulty obtaining government funding (unless allocated in the official budget)
Non-governmental organisation (NGO)	› Non-governmental organisation (or not-for-profit organisation) is established › Organisation is managed by a board of trustees appointed by founders (generally government) › Funding may come from various sources (government may be a major source) › Organisation may be eligible for grants	› Greater credibility with some stakeholders › EE focus, leading to better program design › Independence, that allows greater freedom and flexibility in decision making process › Flexibility to obtain external input and funding	› Greater difficulty obtaining government funding › Difficulty taking on a greater role in implementation › Possibility that some stakeholders may not find the NGO credible

APPENDIX III
FACT SHEETS FOR EACH SECTOR

Cross-Sectoral

Summary of cross-sectoral energy efficiency measures

Objective: Establishing an enabling Environment for energy efficiency in the Gambia

Context and Justification of the Action

The main barriers to EE in The Gambia are:

› Lack of a regulatory framework.
› Lack of financial support and incentives.
› Limited availability and technical capacities of human resources or stakeholders in the field of EE.
› Low awareness levels on EE technologies.
› Absence of EE products and materials on the local market

The Government of The Gambia is best able to succeed in implementing EE at scale if it adopts a portfolio approach establishing a good enabling environment that mitigates barriers and allows organizations involved in project delivery to find efficient business models. The EE enabling environment will include policy frameworks and institutional instruments that promote EE programs and mobilizes the required human and financial resources.

Expected Results and Outputs

› Legal framework for EE development.
› EE institutional establish
› EE financing and incentives
› EE capacity building
› Improved EE communication and awareness
› Strengthened Energy information system and data collection in the country

Context and Justification of the Action

The main barriers to EE in The Gambia are:

› Lack of a regulatory framework.
› Lack of financial support and incentives.
› Limited availability and technical capacities of human resources or stakeholders in the field of EE.
› Low awareness levels on EE technologies.
› Absence of EE products and materials on the local market

The Government of The Gambia is best able to succeed in implementing EE at scale if it adopts a portfolio approach establishing a good enabling environment that mitigates barriers and allows organizations involved in project delivery to find efficient business models. The EE enabling environment will include policy frameworks and institutional instruments that promote EE programs and mobilizes the required human and financial resources.

Overview of Cross-sectoral Measures

1. Enact energy efficiency legislation that:
   - articulates the government's purpose and intent;
   - includes specific, quantitative, time-bound goals or targets;
   - justifies the need for government intervention;
   - assigns responsibility for planning and implementation with a government agency;
   - defines resources to fund energy efficiency, including public funding and tax incentives;
   - includes a prioritised list of actions and obligations of national actors to promote EE at the national scale.
   - identifies the capacity needs of key stakeholders to accompany the implementation of the priority EE action plan and develop targeted EE training programs (energy manager training, energy audit training, etc.).
2. Design and implement strategic public information and awareness programs.
3. Collect end-use data by sector, develop indicators and track progress with implementing EE measures.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector *(Lead Institution)*
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners:

- Ministry of Justice (MOJ): provides legal services in promoting and protecting rule of law and justice delivery likewise renders indispensable legal support to Government and State Own Enterprises (SOEs).
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- Ministry of Tourism & Culture (MoTC): responsible for the growth and development of the tourism sector of the country
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Gambia Revenue Authority (GRA): is an agency under the Ministry of Finance and Economic Affairs (MoFEA) mandate to assess, collect and account for revenues legally due to government.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level
- The Gambia Hotel Association (GHA): authoritative voice of Gambian hotels, working with relevant stakeholders and international partners to enhance the growth of the industry
- National Water & Electricity Company Ltd (NAWEC): main electricity utility of the Gambia, it is vertically integrated thereby participates in all stages of the electricity business from generation to transmission & distribution.
- The Ministry of Gender, Children and Social Welfare (MoGCSW): responsible to ensure the gender aspects are well included in the action design and implementation.
- Gambia Bureau of Statistics (GBOS): is a government department under the Ministry of Finance and Economic Affairs responsible for the collection, analysis, and dissemination of statistical data.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.
- The Alliance for Sustainable Cooking Energy of The Gambia (ASCEG): it seeks to promote cooperation and synergies among stakeholders likewise raise awareness on sustainable cooking energy alternatives.

Timeline for Implementation

Measure	Date
Legal frameworks for EE development that establish an EE entity and dedicated funding for EE measures	2022 (design), 2003 establishment
EE communication and awareness	2023 - 2028 (design and implementation)
Information (end-use data collection), monitoring, and reporting	2022 - 2025 (design and implementation)

Action: Legal framework for EE development

Objective: Lay the foundations for the development of EE markets in The Gambia and will give clear and ambitious (but realistic) strategic orientations. Over time, the initial legislation will be enriched by a series of application texts (legal acts and other regulatory provisions) in order to be more effective and lasting (e.g. Sections on mandatory energy audits, minimum performance standards, labelling, etc.).

Context and Justification of the Action

Lack of a regulatory framework to facilitate development and implementation of EE measures.

Expected Results and Outputs

EE Law

Description of the Key Actions

1. Develop a law dedicated to the promotion of EE in all key sectors (residential, productive, public services), including:
   - The Rationale of the EE Law:
   - proper articulation of the government's purpose and intent of EE policy
   - specific, quantitative and time-bound goals or objectives
   - justification for need of government intervention
   - responsibility for planning and implementation with a government entity
   - gender mainstreaming framework
   - Prioritised list of EE actions and obligations of national actors to promote EE at the national scale
   - Institutional arrangement to implement the EE strategy (Designate an EE entity)
   - Resources to fund energy efficiency, including public funding and tax incentives
   - Arrangements for supervision, monitoring and reporting (MVE framework)
   - Penalties for non-compliance to the EE principles
   - Capacity needs of key stakeholders to accompany the implementation of the priority EE action
   - Plan of targeted EE training programs (energy manager training, energy audit training, etc.).
2. Start a consultative process with key stakeholders of targeted sectors to validate contents of the Law and establish the timeline for the approval.
3. Present the project of the law to the Assembly and launch the approval process to the publication of the EE law.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector *(Lead Institution)*
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives
- Ministry of Justice (MOJ): provides legal services in promoting and protecting rule of law and justice delivery likewise renders indispensable legal support to Government and State Own Enterprises (SOEs).
- National Assembly (NA): This is the legislative arm of Government which serves as the supreme law-making body of the Gambia.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection.
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, likewise, regulates the electricity sector.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.
- The Ministry of Gender, Children and Social Welfare (MoGCSW): responsible to ensure the gender aspects are well included in the action design and implementation.

Timeline for Implementation

Primary/framework EE law or act:	2022 (design), 2024 (establishment)

Action: Establish a dedicated agency or entity responsible of EE (deep dive)

Objective: Provide the Gambia with an institution specialized in EE, responsible for the development and implementation of all for all EE activities, programs and initiatives in the country and which centralizes information related to EE. The creation of an EE agency would complement the mandate of the MoPE.

Context and Justification of the Action

Limited availability and technical capacities of human resources or stakeholders in the field of EE.

Expected Results and Outputs

Legislation designating and describing the mission of the EE agency

Description of the Key Actions

1. Conduct an in-depth analysis of, among others, the financial, administrative, labor and tax implications of different options of body (dedicated body attached to MoPE or independent public entity under the supervision of the MoPE) should be carried out.
2. Develop a law or By-Law to designate the EE authority (for example, by the new EE law proposed as first prerequisite measure). The law must define what type of body such authority would be and its main characteristics, including mission, competences, functions, powers, responsibilities, sources of financing, structure, etc.
3. Essential requirements of an authority exclusively dedicated to EE should also be included: legal status, financial independence, and the ability to create financial schemes.
4. Start a consultative process with key stakeholders of targeted sectors to validate contents of the law and establish the timeline for the approval.
5. Present the project of the law to the Assembly and launch the approval process to its publication.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector (Lead Institution).
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners:

- Ministry of Justice (MOJ): provides legal services in promoting and protecting rule of law and justice delivery likewise renders indispensable legal support to Government and State Own Enterprises (SOEs).
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level
- The Ministry of Gender, Children and Social Welfare (MoGCSW): responsible to ensure the gender aspects are well included in the action design and implementation.

Timeline for Implementation

Law or By law for EE authority:	2022 (design), 2024 (establishment)

Action: Establish an EE fund and incentives scheme

Objective: Create financing schemes for EE programs. The measure proposed here consists of creating the National Fund for Energy Efficiency**.**

Context and Justification of the Action
Lack of financial support and incentives

Expected Results and Outputs
Legislation establishing dedicated EE fund

Description of the Key Actions
The EE framework law must define the attributions and powers of the EE Fund, in accordance with the current legal system. These must be detailed in a dedicated EE Fund law or By-Law and in its organic regulations. In general, the law or By Law should enable the EE Fund to carry out all the contracts and activities permitted by the legal system. Some of the attributions can include:

1. Manage and attract donation and loan funds from international organizations, as well as other contributions and sources (public and private) that are intended to promote EE
2. Support and provide customized financing for the EE programs (TA, EE Investments, Energy audits,
3. Provide financing for training and education programs targeting key stakeholders, as well as for information and dissemination campaigns aimed at the general public
4. Grant guarantees and sureties for obtaining EE-related loans (e.g., guarantees for mortgages for the construction of efficient buildings or retrofitting of existing buildings).

The law or By-Law should include the objectives, powers and competences, legal and institutional regime, organization and governance, actions, human resources, responsibilities.

Key Implementation Partners
Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.

Other key partners:

- The Ministry of Justice (MOJ): provides legal services in promoting and protecting rule of law and justice delivery likewise renders indispensable legal support to Government and State Own Enterprises (SOEs).
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.
- The Ministry of Gender, Children and Social Welfare (MoGCSW): responsible to ensure the gender aspects are well included in the action design and implementation.
- The Gambia Revenue Authority (GRA): is an agency under the Ministry of Finance and Economic Affairs (MoFEA) mandate to assess, collect and account for revenues legally due to government.

Timeline for Implementation

Law or By law for EE Fund:	2022 (design), 2024 (establishment)

Action: Improve knowledge and awareness of EE and its benefits for different stakeholders

Objective: Increase uptake of EE measures in each sector

Context and Justification of the Action

Low awareness levels on EE technologies

Expected Results and Outputs

Communication and awareness campaign launched and implemented

Description of the Key Actions

Energy efficiency in The Gambia suffers from a very large communication deficit which results in a very low level of awareness of the value of EE projects. This initiative aims to promote energy efficiency among end users of energy, economic actors (including importers and distributors of equipment) and governments to increase awareness of the economic and ecological benefits offered by energy management projects.

A campaign should be designed by including development of brochures, advertising or playful short films in the media, mass communication via social networks, outreach campaigns, introduction into school programs, etc.

The communication and awareness campaign should be designed in consultation with key stakeholders and an implementation plan should be developed to define timeline, needed resources (human and financing), target groups, communication plan, expenditures plan.

The design of the communication and awareness campaign should be discussed and approved with the EE authority, the EE Fund could be included as financing source to promote the campaign.

Key Implementation Partners

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- National Water & Electricity Company Ltd (NAWEC): main electricity utility of the Gambia, it is vertically integrated thereby participates in all stages of the electricity business from generation to transmission & distribution.
- The Ministry of Gender, Children and Social Welfare: responsible to ensure the gender aspects are well included in the action designed and implemented.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.
- The Gambia Hotel Association (GHA): authoritative voice of Gambian hotels, working with relevant stakeholders and international partners to enhance the growth of the industry
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.
- The Alliance for Sustainable Cooking Energy of The Gambia (ASCEG): it seeks to promote cooperation and synergies among stakeholders likewise raise awareness on sustainable cooking energy alternatives.

Timeline for Implementation

Communication and awareness campaign:	2023 - 2028 (design and implementation)

Action: Collect end-use data and monitor and report EE indicators.

Objective: Track effectiveness and benefits of EE policies and measures per sector.

Context and Justification of the Action

Lack of data and information in various energy sector

Expected Results and Outputs

Energy information system and statistical data by sectors

Description of the Key Actions

Develop a framework for collecting, analyzing, monitoring and reporting on EE through the support of an energy information system and statistical data by sector (energy consumption by form of energy and by sector, energy intensity, EE indicators, etc.).

In terms of energy information what is most needed are breakdowns of both end-use energy and end-use electricity consumption along with trends in both areas, expressed in both per capita and total terms. There also needs to be a breakdown of daily peak demand and an energy end-use breakdown by region.

- Residential sector survey – It is well known that lighting is the main use of electricity in the household sector, but it is not clear how much consumption it represents within the sector or overall. The relative contribution of other household electrical end-uses or what the trends are in that area are also unknown. The household energy end use survey be conducted now and henceforth every 3–5 years. The surveys can be supplemented with information from NAWEC billing records.
- Productive service survey – There is insufficient data on how electricity is used in Gambian industries. An overall survey of industrial energy use is needed to confirm assumptions made in the assessment and identify other major electricity end uses in the sector and identify most used equipment and their performances.
- Public services survey – There is insufficient data on how electricity and other energy sources are used in the commercial and public services. An overall survey of the sector is needed to identify major end-use and equipment in use and their performance.
- A plan for data collection should be designed and agreed with key – stakeholders to identify sources of information and define human and financing resources necessary to build the energy information system and statistical data as well as start the data gathering activity.

Key Implementation Partners

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector

Other key partners:

Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.

- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level
- The Gambia Hotel Association (GHA): authoritative voice of Gambian hotels, working with relevant stakeholders and international partners to enhance the growth of the industry
- National Water & Electricity Company Ltd (NAWEC): main electricity Utilities of the Gambia, it is vertically integrated thereby participates in all stages of the electricity business from generation to transmission & distribution.
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector.
- Gambia Bureau of Statistics (GBOS): is a government department under the Ministry of Finance and Economic Affairs responsible for the collection, analysis, and dissemination of statistical data.
- The Alliance for Sustainable Cooking Energy of The Gambia (ASCEG): it seeks to promote cooperation and synergies among stakeholders likewise raise awareness on sustainable cooking energy alternatives.

Timeline for Implementation

Energy information system and statistical data by sector: 2022 - 2025 (design and implementation)

Residential

Activity: Residential lighting and appliance program

Objectives: Reduce electricity consumption to a) help Gambian households save money, b) reduce generation needs and c) expand energy access.

Context and Justification of the Action

- Low awareness of EE technologies.
- High cost of high-efficient EE technologies.
- Inadequate level of information on EE benefits.
- Low market availability of high-quality EE products.

Description of Key Actions

1. Design and adopt regulation establishing mandatory minimum energy efficiency standards and labels for priority lighting and domestic appliances and banning products not reaching a certain efficiency.
2. Program should include regularly updating stringency of standards and monitoring, verifying and enforcing (MVE) policies.
3. Launch information campaign on benefits of efficient lighting and appliance products.
4. Design and roll out incentive mechanisms to accelerate the replacement of the stock of inefficient bulbs by high-quality LED, and inefficient appliances. Ensure proper management of replaced bulbs.

Products to be Prioritized

- Domestic light bulbs
- Refrigerators
- Air conditioners
- Fans

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector.
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility participates in all stages of the electricity business from generation to transmission & distribution.
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.

Other key partners

- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Gambia Revenue Authority (GRA): is an agency under the Ministry of Finance and Economic Affairs (MoFEA) mandate to assess, collect and account for revenues legally due to government.
- The Ministry of Gender, Children and Social Welfare: responsible to ensure the gender aspects are well included in the action design and implementation.

Impacts and Timeline

Year	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)	INC	CFL	EE refrigerators	EE RAC
2025	22	18	20%	30%	10%	10%
2030	82	68	60%	50%	50%	50%
2035	192	161	100%	75%	70%	70%
2040	310	259	100%	100%	90%	90%

Same measure for electric household appliances (Fans, electrical water heaters, TVs, etc.).

General Implementation Process

In order to be effective, Labelling and MEPS programs must be carefully implemented. The performance levels and the programme requirements must be developed with stakeholders to ensure maximum participation. Once implemented, the Labelling and MEPS programme should be constantly monitored, evaluated and updated. The most important factor critical for its success is a functional system of monitoring, verification and enforcement that can ensure the products' full compliance with the applicable regulatory measures.

The general process for implementing labelling and MEPS usually involves the following main steps:

- **Establishing a legal framework** by reviewing and revising existing legislation and developing a legal basis for creating MEPS and energy labels.
- **Designating an implementing agency** by first assessing existing institutional capacity for developing, implementing and maintaining a standards and labelling programme, then developing an overall standards and labelling plan and putting one government agency in charge of fulfilling primary duties for implementing every element of the programme.
- **Identifying a group of main stakeholders**, notably representatives from key relevant government bodies, institutions and manufacturers that are interested and inviting them to participate in the process.
- **Collecting the necessary data** by identifying the minimum data needs and developing a plan for collecting the data to conduct analyses in support of the programme. This data is expected to include information about the market, technologies, engineering and usage of products.
- **Conducting a financial and cost-effectiveness analysis** to set the accurate ambition level s for regulatory measures.
- **Setting MEPS levels** by identifying the technically feasible, financially viable levels to be regulated.
- Planning on periodically **monitoring, verifying, evaluating and updating** the MEPS and labelling standards every few years to ensure they remain appropriate, valid and effective.

International experience suggests that, for the labelling and MEPS to be effective, the following key success factors should be carefully considered.

- Performance levels and other requirements must be identified by giving due consideration to the technological developments and market trends related to industrial equipment.
- National MEPS levels should consider regional conditions and international standards.
- Performance levels and programme requirements need to be developed based on stakeholder input to gain their support and participation.
- The programme should involve stakeholders representing the government and private sector, including the government's standards and testing agencies, standardisation institutes, certification and accreditation bodies, testing laboratories, manufacturers and suppliers of energy using equipment.

MEPS development and implementation

Conduct market assessment	Collecting data and information on the equipment to provide an overview of the actual market
Introduce MEPS	Introducing MEPS can help to set the floor quickly and help to eliminate the least efficient products
Include quality requirements	Including quality and performance requirements such as minimum product lifetimes and warranty requirements can be introduced as part of the overall MEPS
Organize awareness campaign	Launching awareness campaign for targeted stakeholders
Minimize market disruption	Since many products currently available on the market will meet the requirements of a technology-neutral MEPS, the introduction of such a policy will have minimal impacts in terms of product availability and pricing
Conduct market assessment	Carrying out a market assessment similar to the one conducted during the lead-up to policy development to re-assess the change in state of the market in terms of market shares, product compliance, and energy performance.
Revisit MEPS	Revisiting MEPS requirements within 24 months to keep pace with market developments and maximize savings. Related measures such as a ban on certain classes of products can also be included here.

Product labelling

Categorical labelling schemes	Informational labels
Indicate that a number of stars or an A-B-C rating can be easiest for consumers to understand and help to transfer their understanding of efficiency from one product type to others. Generally, categorical labels can be more useful in situations where there are no MEPS or other mechanisms to remove the least efficient products from the market.	Support MEPS by providing critical information to assist users in selecting the appropriate product to suit their needs, such as color temperature, appropriate location, dimmability, etc. as well as an indication of endorsement. Informational labels, in combination with MEPS can serve to educate, inform, and be more suitable in a market where products are sourced from many suppliers from different regions

Monitoring, verification and enforcement (MVE) framework

Designing and implementing a suitable and effective monitoring, verification, and enforcement of regulations is crucial to operate a successful market transformation. An effective MVE framework will ensure compliance with program requirements, achievement of energy savings potentials, and greenhouse gas (GHG) emissions reduction goals.

These objectives are defined in existing standards and labelling (S&L) programs, but they may only be achieved through compliance activities.

Achieving a high level of compliance when establishing standards and labels generally offers advantages for all stakeholders as well as the environment. In fact, sector actors work in a fair and honest market that fosters EE investments. Consumers benefit from reduced energy costs, while governments achieve the main objectives of economic and environmental policies.

Monitoring
Collecting information about compliance with program requirements through market surveillance activities to find potential cases of non-compliance for further verification testing

Verification
Verification testing processes to determine whether a product actually performs according to its claimed energy performance value; often a third-party test

Enforcement
Taking actions in response to non-compliance offences with a suite of timely/appropriate actions; build enforcement based on rigorous testing to ensure market and consumer protection

Productive Services

Activity: Energy Efficiency in Industry, Hotels, and Commercial Buildings

Objective: Decrease electricity bills for companies, strengthen productivity and reduce need for expensive and polluting backup generators

Context and Justification of the Action

- The main barriers to EE in the productive sector in the Gambia are:
- Lack of EE regulatory framework that encourage the private sector to adopt EE measures and practices.
- High cost of high-efficient EE technologies.
- Lack of regulations and standards to hinder the import of inefficient electric appliances and equipment (second-hand and new ones).
- Low interest of the private sector to invest in EE.
- Lack of financial support and incentives.
- Limited availability and technical capacities of human resources in the field of EE.
- Limited knowledge of energy-saving technologies, and implementation agents such as consultants, suppliers, and potential stakeholders.
- Low awareness levels on EE technologies
- Scarcity of EE products on the market.

Description of the Key Actions

1. Design and implement an EE programme targeting industries, hotels and commercial buildings including:
2. Energy management
3. Mandatory energy audits for energy consumers over xxx size: Enact regulation forcing large energy consumers (industries, hotels, large commercial buildings) to conduct periodic energy audits and submit an annual energy report.
4. Voluntary agreement with large energy consumers (industries, hotels, large commercial buildings) to progressively introduce energy management systems that comply with ISO 50001 while providing technical and incentive support to signatories of the voluntary agreement.
5. Provide technical support and training to energy auditors and facility managers on conducting energy audits in the different targeted sectors and on implementing EE measures.
6. Training on energy management protocols (ISO 50001) for facility managers:
7. Enabling environment to promote the ESCO market and EPCs in the country including a favorable regulatory and incentive framework.
8. Complementary policies to support EE in the productive sector designed and implemented: Design an incentive and financial mechanism to support the implementation of EE measures and investments.
9. Technical and incentive support to promote generic EE measures for micro, small/medium enterprises (lighting, air conditioning, etc.).
10. Minimum energy performance standards (MEPS) for industrial energy using equipment, starting with motors:
11. Enact regulation imposing minimum energy efficiency performance for industrial energy using equipment including, MVE (motors, HVAC, etc.).

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- Ministry of Tourism & Culture (MoTC): responsible for the growth and development of the tourism sector of the country.
- Ministry of Gender, Children and Social Welfare (MoGCSW): responsible to ensure the gender aspects are well included in the action design and implementation.
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, likewise, regulates the electricity sector.
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- The Gambia Tourism board (GTB): responsible to promote, develop, and regulate the tourism sector in the Gambia.
- The Gambia Hotel Association (GHA): authoritative voice of Gambian hotels, working with relevant stakeholders and international partners to enhance the growth of the industry
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility participates in all stages of the electricity business from generation to transmission & distribution.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.

Timeline

Targeted units implementing EE Measures	Industries & Major Consumers	Hotels	Commercial Buildings
2025	90	9	2,619
2030	328	29	9,561
2035	666	43	23,265
2040	1,216	70	35,382

Impacts

Year	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)
2025	5	4
2030	20	17
2035	47	39
2040	86	72

Action: EE Programme for large energy consumers

Objective: Identify and Reduce Energy Consumption of large consumers

Context and Justification of the Action

- The main barriers to EE in the large energy consumers in the Gambia are:
- Lack of awareness of the large energy consumers on the benefits of adopting EE measures and practices
- Limited availability and technical capacities of human resources in the field of EE.
- Low interest of the private sector to invest in EE.
- Lack of energy management knowledge
- Low awareness levels on EE technologies
- Lack of financial incentives, knowledge of energy-saving technologies, and implementation agents such as consultants, suppliers, and potential stakeholders.
- Lack of regulations and standards to minimise the usage of less efficient electric appliances and equipment

Expected Results and Outputs

- Mandatory energy audits for large energy consumers adopted and applied by the targeted large energy consumers.
- Voluntary adherence to energy management protocols targeting large energy consumers (ISO 50001) introduced.
- EE measures and practices are adopted and implemented in the targeted segment of large energy consumers.
- Capacity buildings sessions for the main stakeholders are conducted (auditors, large energy consumers, financial sector, etc.).

Description of the Key Actions

1. Enact regulation forcing progressively large energy consumers (industries, hotels, large commercial buildings) to conduct periodic energy audits and submit an annual energy report.
2. Encourage and incentive large energy consumers to conduct and submit periodic energy audits including providing technical assistance to them on identifying energy saving opportunities.
3. Design an incentive and financial mechanism to support the implementation of EE measures and investments.
4. Provide technical support and training to energy auditors and energy managers on conducting energy audits in the different targeted sectors and on implementing EE measures.
5. Organize technical and sensitizing Workshops to the top managers and technical staff of the key targeted sectors on the EE opportunities and benefits.
6. Negotiate and sign a voluntary agreement with large energy consumers (industries, hotels, large commercial buildings) to progressively introduce energy management systems that comply with ISO 50001 while providing technical and incentive support to signatories of the voluntary agreement.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Ministry of Tourism & Culture (MoTC): responsible for the growth and development of the tourism sector of the country.
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Gambia Tourism board (GTB): responsible to promote, develop, and regulate the tourism sector in the Gambia.
- The Gambia Hotel Association (GHA): authoritative voice of Gambian hotels, working with relevant stakeholders and international partners to enhance the growth of the industry
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility participates in all stages of the electricity business from generation to transmission & distribution.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.

Timeline

Targeted large energy consumers	Industries & Major Consumers	Hotels
2025	90	9
2030	328	29
2035	666	43
2040	1,216	70

Impacts

Year	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)
2025	3	2.5
2030	11	9.2
2035	22	18.5
2040	43	36

Action: EE Programme for Small and Medium Enterprises (SMEs)

Objective: Reduce energy consumption of MSMEs

Context and Justification of the Action

- The main barriers to EE in the MSMES in the Gambia are:
- Lack of awareness of the MSMEs on the benefits of adopting EE measures and practices
- Limited availability and technical capacities of human resources in the field of EE.
- Low awareness levels on EE technologies
- Lack of financial incentives to support EE investment and the upfront High cost of high-efficient EE technologies.
- Lack of regulations and standards to minimise the usage of less efficient electric appliances and equipment and to hinder the import of second-hand inefficient electric appliances and equipment

Expected Results and Outputs

- Improve EE of MSMEs.
- Capacity buildings sessions for the main stakeholders are conducted (auditors, MSMEs, financial sector, etc.).
- Technical studies for EE actions targeting MSMEs are conducted (Motors, Cooling, Lighting, Power Factor, HVAC, etc.).
- Several communication and awareness plans, tools and campaigns conducted.
- Regulatory text and standards allowing the market transformation towards more efficient energy using equipment adopted.

Description of the Key Actions

1. Provide technical support to identify and promote generic EE measures for micro, small/medium enterprises (Optimization of the electric consumption (motors, air compressors, industrial refrigerator, air-conditioners, HVAC, lighting), Optimization of the power factor and subscribed power, etc.).
2. Provide technical support to establish an energy management system targeting MSMEs: This involves setting up an energy metering system allowing regular monitoring of energy consumption, identification of overconsumption by use, and verification of savings relating to the EE actions carried out.
3. Provide training sessions to energy auditors and energy managers on conducting energy audits in the different targeted sectors and on implementing EE measures.
4. Design an incentive and financial mechanism to support the implementation of EE measures and investments.
5. Enact regulation imposing minimum energy efficiency performance for industrial energy using equipment including (motors, HVAC, etc.).
6. Conduct communication/awareness campaigns and diversify its channels (door-to-door campaigns, production of technical guides, website providing information on news and best practices, discussion workshops with professionals to present EE technologies and their benefits, etc.).

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- Ministry of Tourism & Culture (MoTC): responsible for the growth and development of the tourism sector of the country.
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility participates in all stages of the electricity business from generation to transmission & distribution.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection.

Timeline

Targeted MSMEs	Commercial Buildings
2025	2,619
2030	9,561
2035	23,265
2040	35,382

Impacts

Year	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)
2025	2	1.7
2030	9	7.5
2035	25	21
2040	43	36

Action: **Establishing a programme to improve EE in new buildings**

Objective: **Enhance EE of new buildings**

Context and Justification of the Action

- The main EE barriers in the construction sector are:
- Absence of National building EE code (EEBC) and standards adapted to the Gambian context.
- Low awareness levels of the key actors of the construction sector (e.g., policy-makers, developers, construction companies) on the possibilities and the benefits on optimizing the electricity consumption of the new buildings.
- Lack of technical knowledge and experience of architectures and engineers in the construction sector on the improvement of the energy performance of the buildings.
- Absence of incentive policies for designing and constructing energy efficient buildings
- Lak of information and knowledge of the key actors on the construction sector on the EE available technologies and their cost effectiveness.
- Lack of information and awareness of the building owner on the impact of the design of the building on the future energy consumption.

Expected Results and Outputs

- Building EE code and standards for different type of new buildings are developed and adopted by the key stakeholders of the construction sector.
- The technical capacities of the key involved actors of the construction sector are enhanced.
- Incentive policies are designed and implemented to push the market toward EE buildings and demonstration projects are realized.

Description of the Key Actions

1. Conduct market analysis of the construction sector in the country and perform technical and economic analyses (typically using computer simulation tools) to assess best energy efficiency measures (based on energy saving and cost-effectiveness) to include in the EEBC requirements.
2. Adopt EEBC officially as mandatory or voluntary code after concertation with the key stakeholders of the construction sector.
3. Enact regulation to introduce minimum energy requirements for new buildings in the country.
4. Provide training sessions to architects and engineers in designing, planning and implementing energy efficient and resilient building projects based on bioclimatic design principles and efficient technologies
5. Conduct massive awareness campaign targeting the multiple actors of the construction sector (e.g., developers, construction companies, building owners) on the benefits of adopting the EEBC.
6. Introduce a certification scheme for new buildings in completion of the EE Building Codes linked to an incentive mechanism for developers to improve the EE of new buildings beyond the minimum requirements.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Gambia Standards Bureau (TGSB): responsible to facilitate the Administration and regulation of standards in The Gambia.
- Ministry of Tourism & Culture (MoTC): responsible for the growth and development of the tourism sector of the country.
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Gambia Tourism board: responsible to promote, develop, and regulate the tourism sector in the Gambia.
- The Gambia Hotel Association (GHA): authoritative voice of Gambian hotels, working with relevant stakeholders and international partners to enhance the growth of the industry
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility participates in all stages of the electricity business from generation to transmission & distribution.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.

Timeline

Phases of the BEEC	Planning
Code Development	2023-2024
Code Implementation- Demonstration Phase	2025-2030
Code Enforcement	2031-2040

General Development Approach of the EEBC

Step 1	Review and analysis of existing international EEBCs
Step 2	Assemble a working group made-up of experts to assist in the EEBC development
Step 3	Survey of representative samples of national building stock through walk-through energy audits and questionnaires
Step 4	Develop typical base-case building energy models to be used as benchmarks for EEBC development
Step 5	Collect climatic data, available energy efficiency technologies, and costs of installation of these technologies
Step 6	Perform technical and economic analyses (typically using computer simulation tools) to assess best energy efficiency measures (based on energy saving and cost-effectiveness) to include in the EEBC requirements
Step 7	Draft, revise, and finalize EEBC requirements based on public review with key stakeholders
Step 8	Adopt EEBC officially as mandatory or voluntary code (selecting if EEBC should be mandatory or voluntary depends on existing enforcement mechanisms of general building codes including structural, electrical, mechanical, and fire codes)

Action: Complementary supportive policies to accelerate the adoption of EE measures in the productive sector

Objective: Promote the development of the ESCO market

Context and Justification of the Action

- The government of different countries has put in place in the last 30 years a series of activities to increase the penetration of energy efficiency techniques and behavior in their respective markets. Large numbers of those activities rely on regulatory action and subsidies program to achieve their objective.
- However, a true market transformation toward more efficient energy usage requires a mobilization of the private sector.
- There is already a business model that emerged from the beginning of the eighties to take the energy efficiency activities to a larger share.
- This model, the Energy Service Companies (ESCO) implement integrated projects for the benefit of commercial, institutional and industrial medium size and large energy users. They can become one of the most effective tools to support EE policies of government.

Expected Results and Outputs

Developing a strong foundation for the future development of the ESCO industry in the Gambia

Description of the Key Actions

1. Identify best practices on ESCO support policies.
2. Conduct market analysis to determine the market potential for ESCO in the Gambia.
3. Enhance the capacities of local potential future ESCOs on implementation of energy efficiency projects through Energy Performance Contract (EPC) approach (Investment Grade audits, Typical EPCs, M&V plan, Annual reporting on energy saving achieved).
4. Develop tools and guidelines to spread the ESCO business model among the key stakeholders (Energy consumers, policy-makers, financial sector, energy consultants).
5. Develop a certification scheme for ESCO and their employees.
6. Develop and adopt a regulatory framework for the ESCO business and the EPCs.
7. Design and implement a financial supportive mechanism to the EPCs.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector.
- The Gambia Chamber of Commerce and Industry (GCCI): responsible to facilitate business development, promote trade for Gambian business at both national and international level.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility participates in all stages of the electricity business from generation to transmission & distribution.

Timeline

Activities	Planning
Market potential for ESCO in the Gambia	2024
Enhancing the capacities of potential future ESCOS on the ESCO business model & develop tools and guidelines	2025-2026
Develop a certification scheme for ESCO's	2027
Develop and adopt a regulatory framework for the ESCO business and the EPCs.	2027-2028
Design and implement a financial supportive mechanism to the EPCs	2028-2029
Support the implementation of pilot projects through EPCs	2030

Public Services

Activity: Energy efficiency in Public Office Buildings, Hospitals, and Schools Programme

Objective: Reduce electricity waste in the public buildings and thus a) decrease public spending, b) make public buildings more comfortable and c) reduce electricity imports.

Context and Justification of the Action

Improving the energy efficiency of public sector buildings and operations helps develop the market for energy efficiency for other sectors as well. By leading by example, the public sector ensures EE products are on the market, EE capacity is built, and the successes and benefits of EE are communicated broadly.

Overview of Activities

1. Carry out energy audits for all public buildings over (want to focus on larger buildings and services?) and present all cost-effect EE actions to be implemented
2. Design an institutional and financial support to support the deployment of the EE measures in the public sector and play a lead role in transforming the market.
3. Adopt EE requirements in procurement law.
4. Design and mandate minimum EE performance for new public buildings in building codes.
5. Train building managers on EE practices and technologies.
6. Carrying out information campaign to decrease wasteful behaviours around lighting and cooling practices.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): - Ministry responsible for enacting energy policies for the development of the sector
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.

Other key partners:

- Ministry of health (MOH): To Promote and protect the health of the population by providing healthcare services in partnership with all relevant stakeholders
- Ministry of Basic and Secondary Education (MoBSE): Develops policy guidelines for the implementation of all learning and teaching related activities at basic and secondary levels of education in The Gambia
- Ministry of Higher Education Research Science and Technology (MoHERST): Develops and implements education polices to provide equitable access to high-quality and relevant tertiary and higher education that is sustainable and responsive to national and global needs.
- Ministry of Transport Works and Infrastructure (MoTWI): responsible for setting the overall policy objective and strategic role for the sector
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures, enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.

Timeline

Year	Share of targeted public buildings implementing EE measures
2025	5%
2030	25%
2035	40%
2040	60%

Impacts

Year	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)
2025	0,4	0,3
2030	3	2,5
2035	6	5
2040	13	11

Activity: Energy Efficiency in Public Services Sector (Water)

Objective: Optimize the electrical consumption of pumping stations

Context and Justification of the Action

- High cost of high-efficient EE technologies.
- Lack of technical capacity in management, monitoring and verification techniques.
- Old equipment in need of replacement

Description of the Key Actions

1. Replace old pumps with more efficient units.
2. Optimize the sizing of pump sets according to station needs.
3. Install variable speed drives.
4. Establish centralized energy management systems at NAWEC headquarters and at station level to enable rigorous monitoring of station consumption indicators and verification of savings.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): Ministry responsible for enacting energy policies for the development of the sector
- National Water & Electricity Company Ltd (NAWEC): main electricity and water utility, it participates in all stages of the electricity business from generation to transmission & distribution.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): - Ministry that is responsible for setting the Government's overall macroeconomic and financial policy objectives.
- The Gambia Standards Bureau (TGSB): standardize goods, services, and systems in-line with internationally recognized procedures, enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.

Timeline

Year	Share of targeted units implementing EE measures
2025	10%
2030	40%
2035	60%
2040	75%

Impacts

Year	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)
2025	0,5	0,4
2030	2	2
2035	3	3
2040	5	4

Activity: Efficient streetlighting

Objective: Reduce the electrical consumption of the sector and improve safety and security through brighter streets

Context and Justification of the Action

- Under the Gambia Electricity Restoration and Modernization Project (GERMP) financed by the WB, NAWEC has put in place a pilot program targeting street lighting and replaced 5 000 incandescent bulbs with LED bulbs. It's important to build on this pilot experience and ensure the sustainability of such program by implementing activities that will overcome the barriers to the adoption of EE technologies in street lighting such as:
  - Lack of a regulatory framework.
  - Lack of financial support and incentives.
  - Lack of technical capacity of professionals in charge of streetlighting services.

Description of the Key Actions

1. Analyze current systems and services.
2. Identify equipment options and best practices in lighting services such as.
3. Replacement of existing SHP and HPL lighting lamps with LED lamps.
4. Use of high-efficiency luminaries.
5. Installation of streetlighting voltage regulators
6. Develop a financial mechanism to implement EE options.
7. Support equipment procurement.
8. Enhance the capacities of key stakeholders.

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): Ministry responsible for enacting energy policies for the development of the sector
- National Water & Electricity Company Ltd (NAWEC): main electricity utility of the Gambia, it participates in all stages of the electricity business from generation to transmission & distribution.
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners:

- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.
- The The Gambia Standards Bureau (TGSB): standardize goods, services, and systems in-line with internationally recognized procedures, enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection
- Public Utilities Regulatory Authority (PURA): A multisectoral regulator, which equally regulates the electricity sector.
- The Ministry of Gender, Children and Social Welfare: responsible to ensure the gender aspects are well included in the action design and implementation.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.

Timeline and Impacts

Year	Share HPL to LED	Share HSP to LED	Energy Savings (GWh)	Emissions avoided ($ktCO_2$)
2025	75%	50%	1	0,5
2030	95%	75%	1	1
2035	100%	95%	2	2
2040	100%	100%	3	2

Cooking

Sector: Cooking

Objective: Reduce the use of conventional fuel and optimize the efficiency of cookstoves

Context and Justification of the Action
- Lack of regulatory framework
- Lack of detailed analysis of the efficient cookstoves available in the national market.
- Lack of financial mechanisms.
- Lack of technical capacities to develop and adopt a monitoring and verification (M&V) framework.

Expected Results and Outputs
- Labelling and MEPS for cookstoves introduced.
- Quality of efficient cookstove produced locally is enhanced.
- The market penetration of efficient cookstoves and alternative fuel use is increased.

Description of the Key Actions Develop standards and labelling for cookstoves to guarantee the quality in the long term.
1. Ensure the continued monitoring of cookstove producers to enhance quality.
2. Facilitate the market penetration of efficient cookstoves and alternative fuel use.

Key Implementation Partners

Responsible:
- Ministry of Petroleum and Energy (MoPE): responsible for enacting energy policies for the development of the sector
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.

Other key partners
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection.
- Public Utility Regulatory Authority (PURA): Multi-sectorial regulatory body that equally regulates the energy sector.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.
- The Forestry Department (FD): ensure the sustainable strategy for forestry.
- Gambia Renewable Energy Centre (GREC): align the RE measures with the EE measures.
- The Ministry of Gender, Children and Social Welfare: responsible to ensure the gender aspects are well included in the action design and implementation.
- The Ministry of Trade, Industry, Regional Integration and Employment (MoTIE): is mandated to formulate and implement trade, investment and industrial policies while promoting investment in the productive sectors.
- The Alliance for Sustainable Cooking Energy of The Gambia (ASCEG): it seeks to promote cooperation and synergies among stakeholders likewise raise awareness on sustainable cooking energy alternatives.

Timeline Replacement Programs

Standards and labelling:	2022 - 2025 (development and implementation)
M&V framework:	2022 - 2027 (design and implementation)
Financing mechanisms:	2022 - 2032 (design and implementation)

Sector: Cooking

Objective: Establish standards and labelling for cookstoves

Context and Justification of the Action
- Lack of detailed analysis of the efficient cookstoves available in the national market.
- Lack of regulatory framework

Expected Results and Outputs
- MEPS and labelling for cookstoves introduced

Description of the Key Actions
1. Conduct an in-depth assessment of the cooking sector across the country.
2. Develop standards and labelling for cookstoves to guarantee the quality in the long-term including:
    - Efficiency
    - Consumption rate
    - Effective useful lifetime
3. Establish market surveillance
4. Develop monitoring and evaluation framework

Key Implementation Partners

Responsible:
- Ministry of Petroleum and Energy (MoPE): responsible for enacting energy policies for the development of the sector
- The Gambia Standards Bureau (TGSB): standardize goods, services and systems in-line with internationally recognized procedures enhance efficiency, industrial growth, facilitate trade, promote health and safety likewise environmental protection

Other key partners
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.
- Gambia Renewable Energy Centre (GREC): align the RE measures with the EE measures.
- Public Utility Regulatory Authority (PURA): Multi-sectorial regulatory body that equally regulates the energy sector.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions
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Timeline Replacement Programs

Standards and labelling:	2022 - 2025 (development and implementation)

Sector: Cooking

Objective: Continued monitoring of producers of cookstoves and alternative cooking fuels (Briquette) to enhance quality.

Context and Justification of the Action

Lack of technical capacities to develop and adopt a monitoring and verification (M&V) framework.

Expected Results and Outputs

- M&V framework for cookstoves.
- M&V framework for alternative cooking fuels (briquette)

Description of the Key Actions

1. Hire a firm to provide technical support for design and implement a M&V framework.
2. Design a dedicated M&V framework to ensure compliance with standards and verify the market penetration of efficient technologies including:
   - Objectives
   - Development process
   - Limitations
   - Theory of Change
   - Indicators
3. Engage key stakeholders in the development of the M&V framework

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): responsible for enacting energy policies for the development of the sector
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.

Other key partners

- The Forestry Department (FD): ensure the sustainable strategy for forestry.
- Gambia Renewable Energy Centre (GREC): align the RE measures with the EE measures.
- The Ministry of Gender, Children and Social Welfare: responsible to ensure the gender aspects are well included in the action designed and implemented.
- Public Utility Regulatory Authority (PURA): Multi-sectorial regulatory body that equally regulates the energy sector.
- The Association of Non-Governmental Organizations in the Gambia (TANGO): ensure social aspects and impacts are included in the development and implementation of actions.
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Timeline Replacement Programs

M&V framework:	2022 - 2027 (development and implementation)

Sector: Cooking

Objective: Facilitate the market penetration of efficient cookstoves and alternative cooking fuels

Context and Justification of the Action

Lack of financial mechanisms

Expected Results and Outputs

The market penetration of efficient cookstoves and alternative fuel use is increased.

Description of the Key Actions

1. Increase efforts RE Fund and employ a more proactive approach to reach RE stakeholders and inform them on the availability of the Fund and how it can be accessed
2. Make GREC operational for a more effective response in interventions/implementation of RE/EE arrangements, commitments and initiatives on the side of the GoTG.
3. Support, promote quality briquette production through incentives and technical support likewise market decentralization with competitive pricing to encourage buy-in.
4. Engage with the UNIDO/GEF6 Clean Cookstove beneficiary for production of their planned distribution of cookstoves to schools and hospitals thereby establishing linkage and synergetic relationship to support sustainability of interventions.
5. Collaborate with PURA together with the The Ministry of Gender, Children and Social Welfare and its ancillary departments and relevant women's groups to engage in a medium to long-term program on promoting the use of EE everyday household products.
6. Create a financing mechanism to subsidize the cost of the various tested clean cookstoves with substantial improvement and impact on the health and livelihoods of womenfolk of communities across the nation

Key Implementation Partners

Responsible:

- Ministry of Petroleum and Energy (MoPE): responsible for enacting energy policies for the development of the sector
- The Ministry of Environment, Climate Change and Natural Resources (MECCNAR): responsible of ensuring the alignment with national environmental policies.
- Ministry of Finance and Economic Affairs (MoFEA): responsible for setting the Government's overall macroeconomic and financial policy objectives.

Other key partners

- The Forestry Department (FD): ensure the sustainable strategy for forestry.
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Timeline Replacement Programs

Financing mechanisms:	2022 - 2032 (design and implementation)


MINISTRY OF PETROLEUM AND ENERGY
PROGRESS
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