



MINISTRY OF ENERGY

# Energy Efficiency Policy of Sierra Leone

MAY, 2016



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# **ENERGY EFFICIENCY POLICY OF SIERRA LEONE**

*May, 2016*

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## **FOREWORD**

Sierra Leone is endowed with renewable energy sources which remain highly untapped. Fossil fuel-based energy use is the biggest contributor to the country's greenhouse gas (GHG) emissions. Pursuing renewable energy will enhance global energy security by reducing the country's reliance on fossil-fuel imports; but improving energy efficiency will entail addressing the sustainability. The use of renewable energy sources, and strengthening of energy efficiency could contribute to reducing our dependence on polluting fossil energy. This will significantly reduce the emissions responsible for global warming. For these reasons, the Government of Sierra Leone has decided that, there will be a strong focus on energy efficiency. Energy efficiency needs to be central in energy policies.

All of the core essentials of energy policy are made more attainable if led by strong energy efficiency policy. Sierra Leone needs to join the rest of the world as it transitions to clean energy. It is only efficiency that can make the transition cheaper, faster and smarter. Energy efficiency can contribute to enhancing access to energy for millions of people in the country. The greatest efficiency gains have been led by policy. In the context of our new strategic focus as a country, this is an important step in understanding global trends in energy efficiency. The energy efficiency policy examines specific challenges and the opportunities involved in energy savings when used individually or as part of a system.

This policy was conceived by the Ministry of Energy and developed in collaboration with other MDAs and in partnership with donor agencies. In particular, it has been informed by a series of workshops held and meetings with government officials as well as with donor partners. This policy responds to the global call for sustainable energy initiatives and will be an important reference tool for investors, implementers and end users involved with energy.

In view of the above, it is my fervent belief and aspiration that this policy will enhance the Energy efficiency activities and programs in Sierra Leone.



**Amb. Ing. Henry O. Macauley**  
**Minister of Energy**

## **EXECUTIVE SUMMARY**

This Energy Efficiency Policy aims to enhance energy access while transforming the energy sector towards greater sustainability, taking into account the recent government Agenda for Prosperity's (AfP) call for the need of Sierra Leone to expand its energy supply and to increase the current rate of access to electricity, which is at 13%, and power system operations efficiency rated at 55%. Energy efficiency can be seen as a source of energy since it reduces inefficient consumption, frees up power supply capacity, and thereby can provide greater access to electricity consumers.

The improvement of energy efficiency requires important rule changes and coordinated action by relevant ministries, departments and agencies (MDAs) and in residential, public, utilities, transport, private, cooking, industry and infrastructure sectors, which are yet to be actualized. Therefore, this Energy Efficiency Policy mandates timely adoption of key regulations including other major pressing issues for the new regulator, like access, affordability, willingness to pay and commercialization of the required energy, to have a more potent energy efficiency policy.

This policy will mark the initial steps of aligning the Sierra Leone energy efficiency policy with the ECOWAS Energy Efficiency Policies (EEEP). It therefore mandates the implementation of the National Energy Efficiency Action Plan (NEEAP), at the completion of the Energy Efficiency Policy. This policy is expected to boost access to energy services and ensure the sustainable growth of the energy mix in the country.

**PARTICIPATING MDAs**

	<b>DESIGNATED AUTHORITY</b>
1	Ministry of Energy
2	Strategy and Policy Unit, Energy
3	Ministry of Finance & Economic Development
4	Ministry of Justice
5	Ministry of Transport & Aviation
6	Ministry of Works, Housing & Infrastructure
7	Ministry of Social Welfare, Gender & Children's Affairs
8	Ministry of Education, Science and Technology
9	Ministry of Trade and Industry
10	Ministry of Agriculture, Forestry and Food Security
11	Ministry of Local Government & Rural Development
12	Ministry of Water Resources
13	Sierra Leone Institution of Engineers,



## **1.0 INTRODUCTION**

### **1.1 Background**

A review of the energy sector in Sierra Leone reveals that poor efficiency plagues almost every energy sub-sector, ranging from non-technical losses or theft to low efficiencies of firewood and charcoal combustion. The low efficiency means an unnecessary waste that could be ill-afforded in a country in which energy supplies are well below the suppressed demand.

By its very nature, energy efficiency is multi-sectoral and as such, should be recognized as a basic and strategic issue in the transport, infrastructure, public, private, energy, industrial and trade sectors involved. Financial support will be of utmost importance to ensure the growth and development of the energy efficiency division, and should be regarded as a priority in our strategic thinking.

The national energy efficiency Program is based on the following main objectives: ensuring careful exploration and prudent exploitation of the country's non-renewable energy resources, enhancing energy security and self-reliance, reducing the cost of production of energy-dependent goods and services and reducing adverse impacts of energy utilization on the environment.

### **1.2 Socio-economics of the policy**

The wastages experienced in energy production and utilization create constraints that are restrictive on the socio-economic conditions of Sierra Leone. The judicious application of energy efficiency has the potential not only to raise Sierra Leone's growth rate, but also to deepen its effect on real sectors of the economy. An efficient energy production and utilization will for instance enhance modernization of agriculture, manufacturing and the service sectors, and improve a better quality of life: job creation, productive use and business development as well as improved social service delivery are likely achievements of applying the policy.

Furthermore, improvements in energy efficiency can stretch the reliability and security of electricity supply while reducing the adverse environmental impacts on growth, such as air, water and soil pollution that negatively affect consumers.

### **1.3 Economic justification of the policy**

A more efficient use of energy has the ability to reduce energy bills both in the public and private sectors. Losses in electricity distribution are reported at about 25%, and wastage in the end-use of electricity is estimated at about 45%, so enhancing energy efficiency will effectively reduce costs and imply a great potential for improved competitiveness.

The Government of Sierra Leone recognized that regular and stable energy supply is crucial for business and private sector growth. Hence, the Government's policy priority in the energy sector is to increase generation capacity across the country, minimize technical and distribution losses and explore other sources of cheap and affordable renewable energy. The energy sector strategy also highlighted the need to encourage public private partnerships (PPPs) participation through unbundling of various components (generation, transmission and distribution). However, the sector experienced serious challenges during 2013: Due to technical problems at the Bumbuna Hydro Dam, Sierra Leone faced a slump in electricity output and an attendant energy deficit, which constrained growth in the manufacturing sector and risked limiting the impact of recent reforms aimed at improving the business environment and promoting private sector growth. The Government is therefore working to address these constraints through institutional reforms, rehabilitation of the transmission and distribution network and procurement of thermal plants.

Therefore, this energy efficiency policy is intended to improve energy efficiency levels to scientific and economic acceptable standards within the energy production and utilisation activities.

### **1.4 Energy security and growth**

Improved energy efficiency yields the prospect that economic life cycle savings are greater than the costs of implementing measures, that demand can be better met while reducing the consumption of scarce resources. The development of an energy efficient use should therefore be vigorously pursued and is the fundamental aim of the Energy Efficiency Policy (EEP).

### **1.5. Nexus perspective**

Due to the cross-sectoral nature of energy efficiency, a nexus perspective ensures the appropriate consideration of interdependences on all levels, to reduce trade-off and to build synergies across sectors.

### **1.6 Need for a policy**

The Energy Efficiency Policy shall ensure the productive use of energy and minimize waste, in order to contribute to sustainable development and increased welfare and competitiveness.

The Energy Efficiency elements will ensure that Sierra Leoneans are optimally judicious in their energy utilization and conservation. Energy efficiency will increase the likelihood that national benchmarks of energy contribution to the energy mix are met in a cost-effective way. The Energy Efficiency Policy creates synergies between the efficient uses of electricity in general and energy in particular.

This policy refers to the ongoing harmonization process of energy efficiency policy in the ECOWAS region. It will be implemented through a National Energy Efficiency Action Plan (NEEAP) which will guide the efforts to achieve energy efficiency targets. This approach will take input from all stakeholders in a coordinated process to be managed by the Ministry of Energy.

### **1.7 Policy formulation**

The Energy Efficiency Policy (EEP) will focus on removing the obstacles that have constrained the promotion and implementation of energy efficiency and conservation measures. The policy measures required to achieve this goal comprise fiscal incentives, awareness creation, institutional and human resource capacity development, and financial intermediation.

Therefore, the policy on energy efficiency:

- i. Declares Energy Efficiency as a large, low cost, and underutilized energy resource offering savings on energy bills, improved industrial competitiveness, and lower air pollution.
- ii. Recognizes that poverty mitigation and environmental protection are hindered by the continued predominance and inefficient use of petroleum products, inefficient lighting and motive electric equipment in meeting our energy needs.
- iii. Incorporates provisions for energy efficiency activities into state policy statements and plans, and recognizes the importance of enabling framework conditions for private investment in energy efficiency.
- iv. Requires the preparation of a National Energy Efficiency Action Plan and sets a timeframe for implementation.
- v. Recommends that signatory parties to this policy should collaborate in preparation of the action plans.
- vi. Makes mandatory the continuous monitoring and reviewing of the implementation and effectiveness of these action plans under the national policy statement.
- vii. Facilitates the establishment of a framework for sustainable financing of energy efficiency projects and programs in Sierra Leone.

## 2.0 EXISTING ENERGY EFFICIENCY SITUATION IN SIERRA LEONE

### 2.1 Overview

According to studies conducted by the Ministry of Energy and the UNDP in 2012, the growth in the demand for fuelwood and charcoal is estimated at 3% per annum. Electricity demand, on the other hand, is growing between 6%-7% annually, while consumption of petroleum products is estimated to increase at about 5% per annum. The losses in the production, transportation and use of energy are also high and in average 22% annually. System losses in electricity distribution are about 25% while wastage in the end-use of electricity is estimated at about 45% in 2013. Reduction of losses in energy supply and more efficient use of energy would also reduce demand for energy and delay investment in energy supply infrastructure. Previous efforts by the Ministry of Energy and other agencies to promote energy efficiency and conservation in homes and industries have not resulted in sustained adoption of energy efficiency and conservation in the country, owing to number of financial and institutional obstacles.

In addition, according to various internal reports from the energy, agriculture, transport, environment, education, health and infrastructure sectors, energy utilization in Sierra Leone is far from efficient due to the following reasons:

- i. Forest and woodland reserves are being depleted for heating and cooking purposes using stoves of efficiency of less than 30%.
- ii. Soil erosion, desertification and micro-climate change.
- iii. Emissions from inefficient transport vehicles are sources of hazard in cities.
- iv. Inefficient electrical appliances (lighting, refrigeration, air conditioning, motors, fans, etc.), especially in the residential, commercial and industrial sectors in the face of inadequate supply have aggravated the demand-supply imbalance.
- v. Serious pollution due to inefficient use of fossil fuels is affecting our major cities, leading to negative consequences on agriculture, water supply, forest resources, sea level rise, health, etc.
- vi. Energy Efficiency regulations are currently absent.
- vii. Construction of energy inefficient buildings.
- viii. Non-payment of electricity bills by customers.

In order to encourage energy efficiency and conservation in the development of the sector, new innovative interventions require to deal with the challenges.

### **3.0 CHALLENGES OF ENERGY EFFICIENCY POLICY**

The challenges faced by Sierra Leoneans on energy efficiency are outlined below:

- i. Ignorance and low level of awareness regarding the efficient use of energy
- ii. Non-affordability
- iii. Absence of Research & Development
- iv. Lack of economic incentive
- v. Unreliable electricity supply
- vi. Lack of willingness to pay for energy consumption
- vii. Lack of quality control and standards
- viii. Lack of human capacity
- ix. Lack of legal framework and enforcement mechanisms
- x. Lack of accurate data on consumers
- xi. Unavailability of energy efficient products
- xii. Lack of finance for energy efficiency and conservation programs
- xiii. Lack of environmental pollution control

### **4.0 VISION**

Sierra Leone aims to achieve a modern, reliable, cost-effective, sustainable and efficient energy system by 2030, which is based on a diversified energy mix, a vibrant energy technology industry and provides modern energy services at affordable prices to end consumers.

## 5.0 GUIDING PRINCIPLES FOR ENERGY EFFICIENCY

### 5.1 Policy overview

This policy document addresses energy efficiency in Sierra Leone by considering various aspects such as: financing; legislation, regulation and standards; research and development; capacity building and training, gender and environmental issues; planning and policy implementation.

### 5.2 Policy objectives

This energy efficiency policy is designed to pave the way for more detailed legislation, policies and regulations. Furthermore, the dependence on petroleum products can be reduced through the improvement of efficiency, aggressive research, development and demonstration, human resources development, etc. Consequently, the overall energy efficiency policy objectives may be summarized as follows:

- i. Ensure the development and prudent exploitation of the nation's energy resources, with diversified energy resources options, in order to enhance energy security and self-reliance, as well as to achieve an efficient energy delivery system with an optimal energy resource mix.
- ii. Enhance energy security by reducing energy imports, reduce domestic demand to maximize exports, increase reliability and control energy growth.
- iii. Accelerate the acquisition and diffusion of technology, managerial expertise and indigenous participation in the energy efficiency sector industries, for stability and self-reliance.
- iv. Ensure a comprehensive, integrated and well informed energy efficiency sector, with plans and programs for effective development.
- v. Ensure effective coordination and collaboration among all players in energy efficiency activities in Sierra Leone.
- vi. Reduce adverse impacts of energy utilization on the environment.
- vii. Increase energy efficiency in industry and thus reduce the production cost of energy-dependent goods and services.
- viii. Guarantee efficient, location-specific and cost-effective consumption patterns of improved energy efficiency.
- ix. Develop the nation's energy efficiency resources through the establishment of appropriate financing mechanisms that support private investment in the subsectors.
- x. Incentivize consumers to voluntarily manage and optimize their energy consumption.

- xi. Support a sustained and comprehensive public education and awareness-creation campaign on the methods and benefits of energy conservation.
- xii. Promote the establishment of Centers of Energy Efficiency.
- xiii. Eliminate energy losses due to unwillingness to pay for services by end-consumers.

### **5.3 Elements of the energy efficiency policy**

The elements of a successful Energy Efficiency Policy would include the following:

- i. Financing policy and legislative frameworks, such as
  - Incentives for producers and importers to offer energy efficient appliances and lighting.
  - Tax credits to companies who produce such appliances and fixtures.
  - Incentives for home owners to install energy efficient appliances and lighting such as tax credits.
  - Grants to communities to spur the adoption of community-based renewable energy and energy efficiency processes.
- ii. Appropriate institutional arrangements that support energy efficiency and conservation measures.
- iii. Co-ordination mechanisms and awareness campaigns. e.g. effective energy efficiency training of the population.

The very nature of the above instruments suggests the need for policy directives, rules, regulations and standards that will provide detailed implementation frameworks which are required to spur the deployment of energy efficiency, with the resulting energy market performance. The benefits include greater access to electricity, especially for rural people. Connecting them to the grid is an expensive proposition.

## **5.4 Financing**

### **5.4.1 Objectives**

- i. Promote increased investments and development of the energy efficiency sector, with substantial private sector participation.
- ii. Develop the nation's energy efficiency resources through the establishment of appropriate

financing mechanisms that support private investment in the subsectors.

- iii. Establish appropriate pricing regimes for energy services that would provide incentives to domestic and industrial consumers to voluntarily manage and optimize their energy consumption.

#### **5.4.2 Policy statements**

**GOSL will provide incentives for retailers and importers of energy efficient products and promote local manufacturing of such products.**

**GOSL will provide incentives for consumer adoption of energy saving technologies.**

**GOSL will establish an appropriate pricing regime for energy services that would provide incentives to domestic and industrial consumers to voluntarily manage their energy consumption.**

**GOSL will ensure efficient production, transportation and end-use efficiency and conservation of energy.**

**GOSL will provide energy efficiency funding for government buildings.**

**GOSL will introduce Compact Fluorescent Lamps (CFLs) and Light Emitting Diode (LED) at subsidized prices.**

**GOSL will monitor the direct procurement of energy efficiency: goods and services.**

#### **5.4.3 Measures**

- i. Creation of an energy efficiency fund to be managed by the Ministry of Energy or its appointed agent to provide rebates to on-grid customers who implement substantive changes in their equipment to gain efficiency.
- ii. Developing a framework for the distribution of these funds as reimbursements for applicable technologies based on a list of qualified energy efficiency expenditures.
- iii. Maintaining a list of qualified energy efficient equipment for which buyers will receive a refund. The percentage of the cost of purchase will be determined by the Electrical Inspectorate Section (EIS) of the EDSA at the Ministry of Energy.
- iv. Researching and developing other financing mechanisms for energy efficiency, including options of private sector financing.
- v. Improving the overall macro-economic and financial framework that ensures the availability and affordability of long-term funding for investors in energy efficiency.



- vi. Mainstreaming energy efficiency in the country's institutional, legal and regulatory frameworks.
- vii. Providing a duty-free incentive to importers of energy saving equipment.
- viii. Providing a budget line of each Ministry, Department, and Agency (MDA) to facilitate the purchase and installation of energy efficient appliances or mandating each MDA to devote a minimum percentage of their budget to upgrading their equipment and fixtures.

## **5.5 Legal and regulatory**

### **5.5.1 Objective**

To establish favorable legal and regulatory framework conditions for enhancing energy efficiency and reducing energy intensity in Sierra Leone.

### **5.5.2 Policy statements**

**GOSL will establish legal and regulatory instruments for the energy efficiency sub-sectors.**

**GOSL will enforce penalty on customers' unwillingness to pay for energy bills.**

### **5.5.3 Measures**

- i. Introduction of compulsory minimum energy performance standards for buildings into the national building code according to the ECOWAS Directive for Energy Efficiency in Buildings (EDEEB).
- ii. Introduction of compulsory minimum energy performance standards for lighting according to the ECOWAS energy efficient lighting strategy.
- iii. Introduce compulsory minimum energy efficiency and environmental standards for the sale and use of clean cook stoves and for charcoal production technologies.
- iv. Establishing and enforcing codes and standards for energy efficiency technologies.

## **5.6 Awareness raising**

### **5.6.1. Objective**

To substantially improve public education and awareness on the benefits and methods of energy conservation

**5.6.2 Policy statements**

GOSL will promote energy efficiency and conservation in all sub-sectors.

GOSL will promote the adoption of energy saving appliances and devices through a nationwide energy campaign and training sessions.

GOSL will take the lead in implementing the replacement of inefficient devices with energy efficient ones and promote the same at the state and local levels.

GOSL will develop and implement programs and measures to help consumers optimize their energy use.

GOSL will support a sustained and comprehensive public education and awareness-creation campaign on the methods and benefits of energy conservation.

**5.6.3 Measures**

- i. Inclusion of information/training/EE subjects/informational activities in school curricula and in the local area.
- ii. Awareness-raising measures targeting specific groups (e.g. consumers (male/female), decision makers, specific professional groups like installers, architects, engineers, technicians, local administration, energy utilities etc.).
- iii. Development of websites with information on energy efficient products and practices.
- iv. Development of movie documentaries and/or TV spots, radio messages and cartoons that inform the viewer about energy efficiency.
- v. Distribution of brochures/leaflets and posters or advertisements in public areas.

**5.7 Capacity building****5.7.1 Objective**

To ensure adequate training of energy professionals at different levels for the development of specialized energy manpower.

### 5.7.2 Policy statement

**GOSL will train energy efficiency and conservation personnel to supervise the industrial, residential and transport sectors.**

### 5.7.3 Measures

- i. Capacity building measures for authorities to conduct technical and economic evaluation of public street lighting projects, awareness raising about innovative technologies and business models.
- ii. Capacity building for staff from financial institutions in assessing loan applications and administering loans in energy efficiency projects.
- iii. Strengthen and enhance national institutions in charge of minimum energy performance standards. Institutions must have a mandate, an adequate budget, a well-trained staff, and sufficient resources to effectively oversee the development and implementation of the programs.
- iv. Capacity building, institutional strengthening and training measures for the entire building value chain.
- v. Capacity building for building and construction authorities, for implementation and enforcement (inspection, certification) of energy efficiency criteria in building codes.
- vi. Training for building professionals to comply with the energy efficiency standards in the building code, through use of bio-climatic technologies.
- vii. Improve energy performance of buildings in the informal sector through training, front-end finance and business advice.
- viii. Capacity building to increase EE within municipal water supply systems.
- ix. Capacity building programs for Transmission System Operators/Distribution System Operators on demand-side management.
- x. Developing and enhancing the capacity of project developers, technical service providers and local manufacturers of modern and efficient cogeneration systems.
- xi. Capacity building of policy makers and practitioners to integrate gender in their cooking energy policies and programs.
- xii. Support the creation of networks of rural and urban charcoal markets in order to improve the organization of the charcoal sector and promote the diffusion of improved charcoaling technologies.

- xiii. Capacity building to help cookstove producers improve the production techniques and processes.
- xiv. Training of industry staff in EE measures and EE project financing.

## 5.8 Institutional support and coordination

### 5.8.1. Objectives

- i. To embed energy planning in comprehensive national development planning.
- ii. To ensure effective coordination of all energy sub-sectors and to enhance cooperation between all relevant ministries, agencies and institutions.

### 5.8.2. Policy statement

**GOSL will create an energy efficiency governance structure at national, regional and local levels, which enhances cross-sectoral coordination.**

### 5.8.3. Measures

- i. Include energy aspects in cross-sectoral and comprehensive development plans.
- ii. The Ministry of Energy shall ensure the coordination and effective implementation of a comprehensive energy policy.
- iii. Effective cooperation between Ministries and parastatal institutions shall be enhanced, such as the Ministry of Water Resources; Ministry of Agriculture, Forestry and Food Security; Ministry of Lands, Country Planning & Environment; Ministry of Education, Science and Technology, etc.
- iv. Energy efficiency units shall be established at state and local government level for the development and implementation of policies, strategies and programs.
- v. Public participation shall be ensured both in the formulation of policies and their implementation.

## **5.9 Research and development**

### **5.9.1 Objectives**

- i. Initiate and promote energy efficiency related research and development programs, which are application-oriented and market driven.
- ii. Promote participation in research and development by Sierra Leoneans in all areas of energy exploration, development and utilization.
- iii. Create energy efficiency research centers and provide seed funds for their activity.

### **5.9.2 Policy statements**

**GOSL will create an energy efficiency research and outreach program and provide seed funds for their activity.**

**GOSL will ensure collaboration of energy efficiency research program with universities.**

### **5.9.3 Measures**

- i. Developing and promoting local capability in the nation's design and fabrication of energy efficient devices and technologies for the utilization of energy resources.
- ii. Promoting the demonstration and dissemination of energy efficient devices and technologies for their adoption and market penetration.
- iii. Monitoring and assessing international and energy efficiency technological developments and initiating and sustaining local capability for their applications in all sectors of the economy.
- iv. Initiating and promoting energy efficiency educational programs and research activities in tertiary institutions and research institutes.
- v. Encouraging result oriented research and development, including information systems and software solutions, in the energy efficiency sector by making expenditure on such efforts tax deductible.
- vi. Encouraging data collection and statistical analysis of energy consumption patterns and penetration of different energy conversion and use technologies in different sectors.
- vii. Creating an energy efficiency research and outreach program and provide seed funds for their activities.

## 5.10 Energy efficiency and gender

### 5.10.1 Objectives

- i. Include gender aspects in all policy, program and project planning, implementation, monitoring and evaluation processes.
- ii. Develop policies and strategies to ensure women's economic and social empowerment.
- iii. Build the capacity of women to work in the energy sector.
- iv. Ensure the widespread dissemination of efficient cookstoves and modern fuels to reduce adverse health impacts on women and children.
- v. Develop gender indicators and monitoring strategies for these goals.

### 5.10.2 Policy statement

**GOSL will create conditions for the involvement of women in the energy sector and their economic empowerment through participation in energy-related businesses and access to clean energy carriers.**

### 5.10.3 Measures

- i. Invest in energy infrastructure technologies and end-uses that directly meet poor women's energy demands and make their labor more productive.
- ii. Establish partnerships and knowledge-exchange processes between gender researchers, policy makers and stakeholders in the country.
- iii. Identify the gender-energy-poverty nexus and opportunities for transformation.
- iv. Develop gender-responsive actions and measures for the economic empowerment of women.
- v. Develop programs to train young women to produce, operate and maintain equipment on their own.
- vi. Capacity-building of policy makers and practitioners to integrate gender in their cooking energy policies and programs.
- vii. Conduct gender integration in marketing and awareness-raising messages to ensure that women and men are targeted and to ensure the content is gender sensitive.
- viii. Involve women in the conceptualization, development and implementation of energy policies,

projects and programs.

- ix. Encourage economic empowerment of women through their increased involvement in the cooking energy value chains.
- x. Enhance women's leadership and participation in the energy sector, developing targeted training programs for women, and improving women's access to credit.

## **5.11 Participation of development partners and NGOs**

### **5.11.1 Objectives**

- i. Engage Development Partners and NGOs in developing energy efficiency in Sierra Leone in a well-coordinated manner.
- ii. Guarantee the desired impact and results of energy efficiency programs deployed by Development Partners and NGOs in Sierra Leone.
- iii. Ensure Sierra Leone's participation and capacity enhancement in energy efficiency programs being rolled-out by NGOs.

### **5.11.2 Policy statement**

**GOSL will actively collaborate with NGOs and Development Partners in the implementation of energy efficiency programs.**

### **5.11.3 Measures**

- i. The Ministry of Energy shall continuously engage the NGOs to ensure close cooperation during the development of energy efficiency projects.
- ii. The Government shall encourage NGOs to support the energy efficiency sub-sector by providing competence building tools and assessments, and capacity building trainings.
- iii. The Government shall encourage NGOs to fund demonstration energy efficiency projects through grants and donations.

**5.12 Bilateral, regional and international cooperation****5.12.1 Objectives**

- i. Advance the energy sector and improve economic development through Sierra Leone's effective participation in sub-regional, regional and international energy efficiency related organizations.
- ii. Facilitate the acquisition of energy efficient technology for the development of the sector.
- iii. Encourage a cooperative approach in the exploitation of energy efficiency potentials and development of energy efficiency supply infrastructure.
- iv. Optimize the utilization of the region's energy resources and to promote a more efficient use of energy.

**5.12.2 Policy statements**

**GOSL will lay emphasis on fostering and strengthening energy efficiency cooperation and integration within the ECOWAS sub-region and other development partners.**

**GOSL will mobilize NGOs and development partners to support the nation's policy in energy efficiency.**

**5.12.3 Measures**

- i. Working out a co-coordinated approach to regional and sub-regional energy efficiency planning, based on cooperation and consultation among member countries of ECOWAS and other members of the African Union (AU).
- ii. Facilitating the establishment of mechanisms within the ECOWAS sub-region and other African countries to enhance energy trade and interchange of relevant technology and information.
- iii. Promoting favourable trading relationships with member countries of ECOWAS and the AU which will ease the financing of energy efficiency measures and other energy-related projects.
- iv. Ensuring Sierra Leone's active membership in energy efficiency related sub-regional, regional and international organizations.
- v. Pooling available human resources through the networking of national energy efficiency training and research centers.



- vi. Encouraging the development of standards and labels and the establishment of the necessary infrastructure on a regional level.

### **5.13. Nexus perspective**

#### **5.13.1 Objective**

- i. Include nexus aspects in policy, program and project development, and implementation processes.
- ii. Take account of the interdependences between the energy, water and food sectors, as well as health and environment.

#### **5.13.2 Measures**

- i. Ensuring policy coherence between water and energy ministries, institutions and local governments.
- ii. Setting up a permanent dialogue process among stakeholders responsible for long-term strategies and planning of different water uses.
- iii. Applying water smart and energy efficient technologies for water and sanitation services, such as water supply, waste water treatment, agricultural water uses.
- iv. Promoting the application of renewable energy and energy efficiency in (urban) public health services to reduce overall energy consumption, ensure a reliable energy supply and reap positive environmental side effects.
- v. Participating actively in river basin scale policy dialogues on water and in water-centered regional dialogues with neighboring countries with which Sierra Leone shares river basins.

## **6.0 POLICY OPTIONS OF ENERGY EFFICIENCY**

### **6.1 Policy options overview**

The potential for energy savings in the Sierra Leone economy is huge, especially in the three main energy demand sectors, namely household, industry and transportation and the electricity and petroleum supply sectors. In the household sector, there is considerable energy loss due to inefficient household appliances, especially for lighting and refrigeration, productive use, but as well as due to inefficient technologies such as the traditional three-stone stoves used for cooking mainly in

the rural areas. A comprehensive approach addressing cooking and other heat applications in the households' sector shall be taken by the Government, contemplating a combination of different energy carriers and technologies, balancing the strengths and weaknesses of alternative cooking fuels (firewood, charcoal, LPG), addressing the whole value chain and tailoring them to the specific conditions of the target communities. Energy saving potentials shall be further harnessed in the Sierra Leone industries, where energy is an important cost factor.

### **6.1.1 Policy statements**

**The GOSL will promote the adoption of energy saving appliances and devices through a nationwide energy campaign and training sessions.**

**The GOSL will provide incentives for consumer adoption of energy saving technologies.**

**The GOSL will provide incentives for retailers and importers of energy efficient products and promote local manufacturing of such products.**

**The GOSL will take the lead in implementing the replacement of inefficient devices with energy efficient ones and promote the same at the state and local levels.**

**The GOSL will monitor the progress being made in the adoption of energy efficiency.**

### **6.1.2 Measures**

- i. Tariffs shall be provided for Electricity Distribution and Supply Authority (EDSA) and Electricity Generation and Transmission Company (EGTC) that promote and achieve high efficiency within their customer base.
- ii. Providing institutional arrangements and incentives for the promotion of energy conservation and the use of energy efficient technologies for domestic, industrial use and services, as well as the transport sector and urban planning.
- iii. Developing energy efficiency building codes so that buildings are designed to take advantage of climatic conditions in order to reduce energy consumption.
- iv. Ensuring the importation of the more energy- efficient equipment and machinery.
- v. Promoting Research and Development activities in energy conservation and efficiency, including the development and manufacturing of energy-efficient equipment and machinery, under consideration of standards and labelling.
- vi. Encouraging the production and use of more efficient cook stoves.

- vii. Developing and implementing gender-responsive national programs on clean and efficient cooking.
- viii. Tasking the Electricity and Water Regulatory Commission (EWRC) and other responsible agencies to implement the tariff and rule changes that will form the basis for more meaningful renewable energy policy targets.
- ix. Promoting public awareness about the benefits of improved energy efficiency.
- x. Promoting efficiency improvements regarding electricity transmission and distribution.
- xi. Mandating the deployment of energy saving light fixtures in government offices and facilities.

## **6.2 Industry**

### **6.2.1 Policy statements**

**GOSL will introduce an energy efficient motors program and provide direct subsidies to the purchase of new motors.**

**GOSL will establish certification of energy auditors and accreditation of inspectors for energy efficiency standards.**

**GOSL will introduce energy efficiency management systems and audits.**

**GOSL will design a National Program on Industrial Energy Efficiency and Conservation in collaboration with experts in higher institutions and research centres.**

### **6.2.2 Measures**

- i. Energy Efficient Motors Program: direct subsidies to the purchase of new motors.
- ii. Certification of energy auditors and accreditation of inspectors for Energy Efficiency standards.
- iii. Energy management systems and audits.
- iv. Promotion of ESCOs.
- v. National programs to implement an ISO-compatible Energy Management Standard (EnMS) for Industry (ISO 50001).
- vi. Developing a national database of industrial energy consumption at subsector aggregation level which directs EE policies, and supplies objective indicators for the monitoring of industrial EE.

## **6.3 Utilities**

### **6.3.1 Policy statements**

**GOSL will support the establishment of demand-side management practice in the energy sector to audit industrial, commercial and residential energy use.**

**GOSL will ensure that technical and non-technical losses in the electricity systems are reduced to acceptable standard of best practice.**

### **6.3.2 Measures**

- i. Demand Side Management (DSM) initiative to audit industrial, commercial and residential energy use.
- ii. Standard Offer Program (SOP) providing a rebate for energy savings.
- iii. Regular inspection of lines to identify and remove illegal, unsafe connections, and to encourage all users to become paying customers.
- iv. Shortened billing cycle, including thorough tools that produce a bill immediately upon meter reading.
- v. Regular preventive maintenance of all components of the distribution system, to assure reliable power supply.
- vi. Installation of pre-paid meters to improve bill collection and relations with clients
- vii. Installation of high voltage distribution systems that improve power quality and reduce theft.
- viii. Power factor correction to reduce losses through the installation of capacitor banks on client premises where they are needed.

## **6.4 Transport**

### **6.4.1 Policy statements**

**GOSL will impose extra levies on inefficient vehicles used to cross-subsidize more efficient vehicles.**

**GOSL will introduce fuel efficiency labelling program in the transportation sector for various vehicle types.**

### **6.4.2 Measures**

- i. Extra levies on inefficient vehicles used to cross-subsidize more efficient vehicles.
- ii. Developing and enforcing public procurement guidelines for the acquisition of low-consumption vehicles in the public sector.
- iii. Developing and implementing transport demand management and mobility management programs.
- iv. Awareness-raising for municipal authorities and building planners on the advantages of sound spatial planning.

## **6.5 Residential**

### **6.5.1 Policy statements**

**GOSL will ensure that standards and labels are mandatory for appliances and buildings.**

**GOSL will encourage the use of modern fuel alternatives (LPG, Biogas, solar cookers and others) as a cooking-fuel.**

**GOSL will ensure quality and standard charcoal production for cooking-fuel.**

**GOSL will introduce use of Compact Fluorescent Lamp (CFL) and Light Emitting Diode (LED) as efficient lighting technologies.**

### **6.5.2 Measures**

- i. Distribution of CFLs and LED lighting systems at subsidized prices.
- ii. Mandatory standards and labels for appliances, vehicles and buildings.
- iii. Mandatory energy audits for commercial buildings.
- iv. Encouragement of the use of LPG and other renewable fuel as a cooking-fuel.
- v. Establish National Registries for on-grid and off-grid lighting products.
- vi. Conduct regular census of importers, wholesalers and distributors of efficient lighting products.
- vii. Measures aimed to reduce energy consumption in public buildings by addressing the building as such and by addressing the building operation (including user behavior)
- viii. Promotion of the use of local materials in construction.

- ix. Raise awareness among decision makers and the general public regarding the financial benefits of energy efficient buildings and tropical architecture.

## 6.6 Cooking

### 6.6.1 Policy statement

**GOSL will provide access to safe, clean, affordable, efficient and sustainable cooking**

### 6.6.2 Measures

- i. Development and adoption of national cooking policies, strategies and targets, including legal and regulatory mechanisms in line with the existing ECOWAS regional policies, or alternatively, improvement of existing national policies and strategies.
- ii. Support cross-sectoral coordination through the inclusion of clean cooking across sectors, e.g. through inter-ministerial task teams.
- iii. Improving the efficiency and sustainability of the energy value chain through participatory and sustainable forest management (PSFM).
- iv. Monitoring system for the fuelwood value chain.
- v. Establish SMEs for distribution of efficient fuels at local level, and establish public bodies to support and stimulate private sector involvement.
- vi. Capacity building programs for public and private actors, and collaboration with local communities.
- vii. Standards and labeling for improved cook stoves and fuels.
- viii. Information dissemination and knowledge sharing (e.g. catalogue of best practices and strategies, information materials on clean cooking fuels and stoves, awareness-raising campaigns and capacity building workshops).
- ix. Programs to enhance access to finance, increase the use of carbon financing and improve the regulatory framework.

## 6.7 Public

### 6.7.1 Policy statements

GOSL will promote educational campaigns on technologies, particularly in engineering and architecture.

GOSL will encourage the use of energy saving public lighting.

GOSL will develop rules and laws that promote the penetration of Green Buildings and Energy Efficiency in collaboration with concerned institutions.

GOSL will encourage Energy Efficiency measures with special focus on the development of energy efficient lighting.

### 6.7.2 Measures

- i. Educational campaigns, particularly in engineering and architecture.
- ii. Energy Efficiency funding for government buildings.
- iii. Energy Efficiency Monitoring and Implementation Program.
- iv. Establishment of an Energy Efficiency Center.
- v. Strengthen the coordination between authorities in charge of spatial planning and building regulations regarding energy efficiency criteria in building codes.

## 7.0 PLANNING AND POLICY IMPLEMENTATION

Energy Efficiency planning and policy implementation in the country should take place at three different levels.

At the **national level**, they involve macro-planning and policy implementation as part of the multi-sectoral national development policies and plans which are the responsibilities of the Strategy and Policy Unit (SPU) in the office of the chief of Staff at State House. Energy Efficiency policy and planning have not been within the purview of the SPU. Indeed, many agencies are involved directly or indirectly in energy efficiency issues. These include the Ministry of Energy, Ministry of Works, Housing and Infrastructure, Ministry of Trade and Industry, Ministry of Agriculture, Food Security and Forestry, Ministry of Lands, Country Planning & Environment, Ministry of Education, Science and Technology, the Presidential Adviser on Energy, and several entities beneath the afore-mentioned ministries. The Ministry with the

most encompassing responsibility for energy efficiency is the Ministry of Energy, as entities such as: Electricity and Water Regulatory Commission (EWRC), the Electricity Generation and Transmission Company (EGTC), the Electricity Distribution Supply Authority (EDSA) and the emerging private sector (GENCOS and DISCOS) fall within its purview.

At the **Sectoral Level**, the Ministry of Energy is responsible for electricity policies, including energy efficiency policy, which is clearly more related to electricity supply. Although other Ministries must be involved, the Ministry of Energy is the appropriate lead agency for developing and implementing an energy efficiency policy. The Ministry of Energy is involved in overall planning, development, monitoring and implementation of all policies for the electricity sector in all its ramifications. This function ensures consistency and alignment of the electricity sub-sectoral with the National Energy Policy and plans. The development and implementation of policies by any energy-related Ministry must be consistent with provisions of the National Energy Policy which is coordinated by the Ministry of Energy.

At the **sub-sectoral Level**, more specific sub-sectoral planning and policy implementation for the development, exploitation and utilization of particular energy resources, are carried out in the various energy sub-sectors, such as the EDSA, EGTC, EWRC and other public operators.

This policy document applies to issues at the Sectoral Level.

## 7.1 Planning Framework

To provide vital input into national development planning and policy formulation and to ensure a sustainable development of the energy sector, a robust energy efficiency policy and planning framework is to be defined.

It will be necessary to spend time and resources to obtain reasonably accurate cost estimates for energy efficiency measures. Several alternative frameworks to guide energy efficiency planning will be considered. These planning methodologies will include:

- i. Complementary planning of energy and energy efficiency measures for optimisation of effects.
- ii. Focus on efficiency, whereby existing energy supplies in the major sectors (domestic, industries, transport) shall be used in the most efficient way.

### 7.1.1 Policy statement

GOSL will provide vital input into national development planning and policy formulation and ensure a sustainable development of the energy efficiency policy and planning framework.



**7.1.2 Measures**

- i. Strengthening cooperation between the Ministry of Energy and the other bodies active in the energy, energy efficiency and planning sectors.
- ii. Encouraging formal discussion and collaboration between institutions in the energy / energy efficiency and planning sectors whose activities are inter-related.
- iii. Establishing energy efficiency planning and implementation units at state government levels and assigning responsibilities for energy efficiency related matters at local government levels.
- iv. Ensuring that the strategic plans and programs of the energy efficiency sub-sectors are appropriately appraised with a view to ensuring consistency with the overall national energy policy and plans and resolving conflicts arising from sub-sectoral plans and programs.
- v. Establishing a national energy information system which will involve consistent data gathering and processing of energy resource inventory, consumption pattern, energy technologies, energy efficiency measures, and other relevant socio-economic parameters.
- vi. Instituting an accelerated and effective manpower energy efficiency development program.

**7.2 Policy implementation**

No policy can succeed without a proper annual action plan based on available public and private funding and proper implementation. To achieve the stated policy objectives and successfully implement the strategies, various instruments including economic measures, information and education, legislative measures and institutional arrangements need to be used. The Ministry of Energy will assign clear responsibilities to create an enabling environment that provides for more responsibilities to be placed in the hands of decentralized energy service providers and rural organizations and stakeholders, and consequently increasing the likelihood that the program will succeed.

**7.3 Short-medium- and long-term goals**

The implementation process for this Energy Efficiency Policy requires strategies that allow for several factors including priority setting, policy continuity and a clear focus on key issues. Accordingly, such strategies should be based on realistic targets, a defined time frame as well as an effective target evaluation. The advantages of this approach are two-fold:

- i. It will enable planners and implementing organs to include the cost of each strategy in their respective budgets, as they fall due; and

- ii. It will aid monitoring organs to assess the progress of implementation of the various strategies.

In this regard and, in line with usual planning horizon, it is expected that short-term measures are those that could be evaluated within 1 to 2 years. A 5-year period is advocated for medium-term activities. With this perspective, the recommended activities for the short-term horizon are as indicated below:

- i. Prioritization of the policy strategies for implementation, with the setting of realistic targets and the effective monitoring and evaluation of the implementation process.
- ii. Developing and implementing monitoring and verification of the energy efficiency policy and compliance with the guidelines and regulations on various energy matters by all sectors of the economy.
- iii. Ensuring the implementation of fiscal measures necessary for the achievement of the set objectives of the energy efficiency policy.
- iv. Strengthening of all relevant regulatory agencies in order to ensure the enforcement of an appropriate set of standards and procedures, including in particular standards and procedures on exploration, production and utilization of energy efficiency appliances.
- v. Improvement of the effectiveness of energy planning and implementation by establishing energy planning and implementation units at state government levels and assigning responsibilities for energy related matters at local government levels.
- vi. Enabling of private sector participation in the energy efficiency sub-sector through the review of existing relevant laws and regulations.
- vii. Establishment of a strategy for the public awareness, education and participation in the realization of the goals and objectives of the energy efficiency policy.
- viii. Establishment of necessary guidelines and regulations on energy efficiency, conservation, consumption, technology, fuel mix, information gathering, etc. as appropriate.
- ix. Monitoring and assessment of technological developments in all energy efficiency areas and development of capabilities to apply them, as appropriate in the various sectors of the economy.
- x. Updating memorandum of understandings to ensure that it contains appropriate incentives that will attract investments in the energy efficiency sub-sector.

#### 7.4 National Energy Efficiency Action Plans (NEEAP)

The national energy policy has already identified the need for an energy efficiency policy.

There are key factors that are critical to the effectiveness of the energy efficiency policy without which the likelihood of success in implementation is little to none. These factors may include:

- i. Clear and realistic energy efficiency standards with appropriate target year and goal to guide the activities of Ministry of Energy, public, EWRC, other MDAs, financial institutions, foreign and domestic investors, non-governmental organisations (NGOs), development partners and donors, and others.
- ii. Public Benefits Fund (PBF) based on penalties of companies not meeting standards with a portion of the tariff designed to support energy efficiency activities.
- iii. Incentives such as:
  - a. Incentives for home owners to install energy efficient appliances and lighting;
  - b. Incentives for producers and importers to offer energy efficient appliances and lighting;
  - c. Tax credits for home owners who install energy efficiency appliances and lighting;
  - d. Tax credits to companies who produce such appliances and fixtures.
- iv. Government budgetary backing to support the activities of key players in the implementation of a National Energy Efficiency Policy (NEEP), including research, development and required feasibility studies.

Policy Strengthening and Strategy Articulation represent the first step in moving forward. It is essential to task all relevant agencies to do their part and compel them to swiftly implement specific items tasked to them. Therefore, with Presidential backing, the Minister of Energy shall develop a task list from items in this policy for each Ministry, Department and Agency to implement. He shall also empanel a group to coordinate these activities, amongst other assignments. The process shall, following the ECOWAS Policies on Energy Efficiency, produce one product within the next 6 months: (a) National Energy Efficiency Action Plan (NEEAP). This action plan, along with rearticulated objectives, policies and strategic measures and an Integrated Resource Plan for electricity (IRP) will serve as basis for a National Policy on Energy Efficiency to be completed within a year from the approval.

This policy document therefore directs the Minister of Energy to implement the following key activities that will work to ensure successful completion of a National Policy on Energy Efficiency:

- i. The development of a National Energy Efficiency Action Plan (NEEAP) to be completed

within 6 to 12 months of the adoption of this document.

- ii. The preparation of a 15-20-year integrated electricity resource plan (IRP) that will include NEEAP components.
- iii. The creation and empanelling of a Monitoring and Evaluation group from a consortium of stakeholders to achieve the following:
  - a. Monitor the development of NEEAP for 12 months;
  - b. Develop Monthly Progress Reports;
  - c. Declare energy efficiency (EE) 2030 benchmark;
  - d. Prepare a 15-20-year integrated electricity resource plan (IRP) that includes NEEAP components to be completed within 12 months of the adoption of this policy;
  - e. Ensure that the NEEAP passes a benefit/cost test;
  - f. Long-term monitoring and reporting of accomplishments in energy efficiency;
  - g. Long-term advocacy for energy efficiency targets.
- iv. The creation of (along with the Minister of Finance and Economic Planning and other entities that are involved in the budgetary process):
  - a. A budget per year for the M & E group;
  - b. A long-term energy efficiency fund to support local government, community and household initiatives;
  - c. A reasonable budget to support all other activities needing government budgetary allocation in the National Policy on Energy Efficiency.

## **7.5 Monitoring and evaluation**

The Monitoring and Evaluation Group will be designated by the Minister of Energy. Subcommittees will include an Energy Efficiency Taskforce as well as other members delegated by the Minister.

## ACRONYMS

<b>AfP</b>	Agenda for Prosperity
<b>AU</b>	African Union
<b>CFL</b>	Compact Fluorescent Lamp
<b>Disco</b>	Distribution Company
<b>DSM</b>	Demand Side Management
<b>ECREEE</b>	COWAS Commission for Renewable Energy & Energy Efficiency
<b>ECOWAS</b>	Economic Community of West African States
<b>EDEEB</b>	ECOWAS Directive for Energy Efficiency in Building
<b>EDSA</b>	Electricity Distribution and Supply Authority
<b>EE</b>	Energy Efficiency
<b>EEP</b>	Energy Efficiency Policy
<b>EEEP</b>	ECOWAS Energy Efficiency Policy
<b>EGTC</b>	Electricity Generation and Transmission Company
<b>EIS</b>	Electrical Inspectorate Section
<b>EnMS</b>	Energy Management Standard
<b>EREP</b>	ECOWAS Renewable Energy Policy
<b>ESCOs</b>	Energy Services Companies
<b>EWRC</b>	Electricity and Water Regulatory Commission
<b>Genco</b>	Generation Company
<b>GOSL</b>	Government of Sierra Leone
<b>GWh</b>	Gigawatt hour
<b>IRP</b>	Integrated Resource Plan
<b>ISO</b>	International Standards Codes
<b>LED</b>	Light Emitting Diodes
<b>LPG</b>	Liquefied Petroleum Gas
<b>MAFFS</b>	Ministry of Agriculture Forestry and Food Security

<b>M&amp;E</b>	Monitoring and Evaluation
<b>MDAs</b>	Ministries, Departments, Agencies
<b>MoE</b>	Ministry of Energy
<b>MoFED</b>	Ministry of Finance and Economic Development
<b>MoEST</b>	Ministry of Education Science and Technology
<b>MoLCPE</b>	Ministry of Lands, Country Planning and Environment
<b>MoLGRD</b>	Ministry of Local Government and Rural Development
<b>MoWHI</b>	Ministry of Works, Housing and Infrastructure
<b>MTA</b>	Ministry of Transport and Aviation
<b>MTI</b>	Ministry of Trade and Industry
<b>MW</b>	Megawatt
<b>MWR</b>	Ministry of Water Resources
<b>NEEAP</b>	National Energy Efficiency Action Plan
<b>NEEP</b>	National Energy Efficiency Policy
<b>NGOs</b>	Non-Government Organizations
<b>NPA</b>	National Power Authority
<b>PPPs</b>	Public-Private-Partnerships
<b>PSFM</b>	Participatory & Sustainable Forest Management
<b>R&amp;D</b>	Research and Development
<b>SE4ALL</b>	Sustainable Energy for All
<b>SLSB</b>	Sierra Leone Standards Bureau
<b>SLE</b>	Sierra Leone
<b>SME</b>	Small and Medium Enterprises
<b>SOP</b>	Standard Offer Program
<b>SPU</b>	Strategy and Policy Unit
<b>SSL</b>	Statistic Sierra Leone
<b>UNDP</b>	United Nation Development Programs

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**MINISTRY OF ENERGY**