National Energy Efficiency Action Plan (NEEAP)

REPUBLIC OF SIERRA LEONE

Period [2015-2020/2030]

Within the implementation of the

ECOWAS Energy Efficiency Policy (EEEP)

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ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE)
http://www.ecreee.org

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1 INTRODUCTION

The ECOWAS Commission has developed the ECOWAS Energy Efficiency Policy (EEEP) which includes targets, measures, standards and incentives for energy efficiency (EE), to be implemented at both regional and national levels. It was adopted by the ECOWAS Heads of State and Government in July 2013. According to the EEEP, all fifteen ECOWAS countries shall adopt, by the end of 2014, five-year rolling NEEAPs that will contribute to the achievement of the regional ECOWAS targets in the next two decades.

The NEEAPs have been prepared by the ECOWAS Member States in accordance with a template provided by ECREEE. The NEEAPs include baseline data on the status of energy efficiency development, and propose attainable and energy efficiency targets, incl. gender disaggregated indicators, based on national potentials and socio-economic assessments. Moreover, an overview on concrete laws, incentives and measures to be implemented by the country to achieve the targets will be included. The implementation of the NEEAPs will be monitored by the Ministry of Energy and ECREEE on behalf of the ECOWAS Commission during a continued consultative process. The NEEAP template was prepared with technical assistance of ECREEE and UNIDO. The NEEAP development process has been supported by a broad range of partners such as the GEF Strategic Programme for West Africa, GIZ, the Governments of Austria and Spain.

2 SUMMARY OF NATIONAL ENERGY EFFICIENCY POLICY

According to the national energy profile studies conducted by the Ministry of Energy and the UNDP in 2012, the growth in the demand for fuel-wood 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 as high as 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 a number of financial and institutional obstacles.

In addition, according to various internal reports from the energy, agriculture, transport, environment 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 less than 30%.
ii. Soil erosion, desertification and micro-climate change.
iii. Emissions from inefficient transport vehicle are sources held 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

This energy efficiency policy is designed to pave the way for 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. To ensure the development and prudent exploitation of the nation's energy resources, with diversified energy resources option, 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. To enhance energy security by reducing energy imports, reduce domestic demand to maximise exports, increase

xi. To support a sustained and comprehensive public education and awareness creation campaign on the methods and benefits of energy conservation; and
xii. To promote the establishment of Centres of Energy Efficiency.
xiii. To eliminate energy losses due to unwillingness to pay for services by consumers

The National Energy Efficiency Policy (NEEP) will focus on removing the obstacles that have constrained the promotion and implementation of energy efficiency and conservation measures. The policy strategic measures required to achieve this goal comprise fiscal incentives, awareness creation, institutional and human resource capacity development, and financial intermediation in the core areas of industry, utilities, transport, residential, cooking and public.

Therefore the National Energy Efficiency Policy:

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 programmes in Sierra Leone.

3 ENERGY EFFICIENCY POTENTIALS

Brief description of the energy efficiency potential in Sierra Leone by sectors / fields as provided in the table 1 below.

Table 1

	Energy savings potential (GWh/year) 2013 (Reference year)	Energy savings potential (GWh/year) 2020	Energy savings potential (GWh/year) 2030
Efficient Lighting			
On-grid Lighting	5	105	266
Off-grid Lighting	0.1	31	67
Efficiency in Building			
Public Buildings(including appliances)	0	5.4	25
Residential buildings (including appliances)	0	44	50
Commercial buildings (including appliances)	0	13	29
Electrical Appliances			
Refrigerators,	0	6	8
Air conditioning,	0	3	6
Electric water heating,	0	2	5
Washing machines	0	0.3	3
Total (appliances only)	0	11.3	22
Industry	0	36	78
Electricity Sector			
Electricity generation	0	5	23
Electricity transmission	0	11	46
Electricity distribution	0	112	173
Total Energy Efficiency Potential (GWh)	5.1	362.3	757

4 SUMMARY OF TARGETS

The status of energy efficiency in 2013, and the targets for Sierra Leone intended to be achieved by 2020 and 2030 as contribution to the attainment of the ECOWAS Energy Efficiency Policy targets (see targets in the EEP document) are presented below. The indicated targets in this section have undergone approval by the respective institutions in Sierra Leone.

4.1 Targets for Energy Efficient Lighting

Table 2

	2013	2020	2030
Penetration rate of on-grid, energy efficient light (%)	0.6	60	100
Penetration rate of off-grid, energy efficient lights (%)	10.3	70	100
Percentage of public street lights that are high efficiency (%)	10.3	85	100

4.2 Targets for High Performance Distribution of Electricity

Table 3

	2013	2020	2030
Total of losses in the power system, including technical and non-technical losses, in both transmission and distribution (% of power available: generation + balance of imports and exports).	45	15	9
Transmission losses (%)	6	3	2
Total distribution losses (%)	39	12	7
Technical losses (%)	18	11	7
Non-technical losses (%)	27	4	2

4.3 Targets for Energy Efficiency Standards and Labelling

Table 4

	In force since 2013 (reference year)	By 2020	By 2030
Total Number of Energy Efficiency Standard in force in the country	12	52	110
Number of Efficient lighting standards (on-grid / off-grid and street lighting)	4	12	38
Number of Appliances Standards in force (refrigerators, air conditiners, washing machines, electric water heaters, fans, transformers, etc ,...)	8	40	72
Total Number of Energy Efficiency Labels in force	15	55	143
Number of Efficient Lighting Labels (on-grid / off-grid and Street lighting)	5	15	48
Number of Appliances Labels in force (refrigerators, air conditiners, washing machines, electric water heaters, fans, transformers, etc ,...)	10	40	95

4.4 Targets for Energy Efficiency in Buildings

Table 5

4.5 Target for Energy Efficiency in Industries

Table 6

	2013	2020	2030
Percentage of Industries that implement energy efficiency measures (%)	N/A	65	100
Percentage of energy saving in industry (%)	N/A	21	75

5 GENERAL INDICATORS

The table below shows the data of Sierra Leone population, population growth rate and family size for the periods 2010, 2011 and 2012.

Table 7

	2010	2011	2012
Population Number	5, 746,000	5, 890,000	6, 037,000
Population Growth rate (%)	2.4	2.4	2.4
Family size	6	6	6

6 Macro-economic indicators

The table below describe the Macro-economic Indicators of Sierra Leone for the period 2006 to 2010 and 2015 to 2030.

Table 8

	Data from the past, where available					Targets for the future, where pertinent (define years)			
Indicator	Year 2006	Year 2007	Year 2008	Year 2009	Year 2010	Year 2015	Year 2020	Year 2025	Year 2030
Primary energy intensity (Total Primary Energy Consumption KWh/GDP)	8.6	7.47	6.72	6.81	6.77	10.97	11.45	11.73	12.3
Final energy consumption per capitar (kWh/capita)	3,108	3,024	3,072	2,988	3,035	4,872	6,480	8,976	11,148
Annual Electricity consumption (kWh/capita)	7.82	7.21	28.04	26.28	34.33	162.13	911.28	995.13	1,078.29
Electricity intensity (final electricity consumption kWh/GDP)	0.0237	0.021	0.078	0.073	0.093	0.289	0.888	1.052	1378
Electrification rate (%) (the ratio between the population served and the total population of the area)	8	8	8	8	8.2	19	44	72	92

RGETS AND TRAJECTORIES

timated trajectories by 2020-2030

d estimated trajectories for lighting

013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
.6	5	10	30	40	50	60	65	70	75	80	85	90	92	96	98	100
5	22	59	69	81	93	105	110	144	150	153	160	175	180	191	263	266
0.3	12	15	30	45	60	70	75	78	80	85	88	90	95	97	98	100
6	7	9	10	12	13	14	15	17	18	20	21	23	27	28	29	30
0.3	25	35	50	60	70	85	86	87	88	89	90	92	94	96	98	100
0000	350000	500000	700000	820000	1100000	1500000	1700000	1900000	2000000	2050000	2100000	2130000	2250000	2300000	2400000	2500000

e phase out of incandescent bulbs by 2020.

Electricity - Targets and estimated trajectories by 2020-2030

nd estimated trajectory for losses in the electricity sector

013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
45	38	29	25	22	18	15	15	14	14	13	13	12	12	11	10	9
6	5	5	4	4	4	3	3	3	3	3	3	2	2	2	2	2
39	33	24	21	18	14	12	12	11	11	10	10	10	10	9	8	7
18	16	14	13	13	12	11	11	10	10	9	9	9	9	9	8	7
27	22	15	12	9	6	4	4	4	4	4	4	3	3	2	2	2
3	27	89	99	107	119	128	134	144	158	163	174	180	186	190	216	242

g distribution losses below 10% by 2020

Table 11: National 2020 and 2030 targets for energy efficiency labels

	2010	2013	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Number of Energy Efficiency Standards in force in the country	0	12	16	26	26	26	52	52	52	74	74	74	88	88	88	110	110	110
Number of Efficient lighting standards (on-grid / off-grid and Street lighting) in force	0	4	6	6	6	6	12	12	12	24	24	24	28	28	28	38	38	38
Number of Domestic Appliances Standards in force (Refrigerators, Air conditioners, Washing machines, electric water heaters, fans, transformers, etc ,...)	0	8	10	20	20	20	40	40	40	50	50	50	60	60	60	72	72	72
Total Number of Energy Efficiency Labels in force	0	15	16	32	42	42	55	55	55	95	95	95	111	111	111	143	143	143
Number of Efficient lighting Labels (on-grid / off-grid and Street lighting) in force	0	5	6	12	12	12	15	15	15	30	30	30	36	36	36	48	48	48
Number of Domestic Appliances Labels in force (Refrigerators, Air conditioners, Washing machines, electric water heaters, fans, transformers, etc ,...)	0	10	10	20	30	30	40	40	40	65	65	65	75	75	75	95	95	95

Table 12: National 2020 and 2030 targets and estimated trajectories for energy efficiency in buildings

	2010	2013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Number and type of new private buildings	0	0	0	1,200	1320	1452	1597	1756	1931	2124	2337	2570	2828	3110	3421	3764	4140	4554
Percentage of new large private buildings that implement energy efficient building designs and methods, according to the national building code.	0	0	0	10	13	15	18	20	23	26	30	33	36	40	42	45	48	50
Energy saving potential of new private buildings (GWh)	0	0	0	25	35	45	51	57	59	62	64	66	68	70	72	74	76	79
Number and type of new public buildings	0	0	0	20	40	60	80	100	120	140	160	180	200	220	240	260	280	300
Percentage of new public buildings that implement energy efficient building designs and methods, according to the national building code.	0	0	0	35	40	45	50	55	60	65	70	75	80	82	84	86	88	90
Energy saving potential of new public buildings (GWh)	0	0	0	1	2	3	4	5.4	10	12	14	16	18	21	22	23	24	25

Table 13

	2010	2013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Number and type of industries	0	0	265	301	341	385	434	487	546	611	682	760	846	941	1045	1160	1286	1424
Energy saving potential (GWh)	0	0	0	8	12	21	29	36	40	46	50	52	55	60	63	67	70	78
Percentage of industries that implement energy efficiency measures (%)	0	0	10	25	35	40	55	65	68	72	75	78	80	85	90	92	96	100
Percentage of energy savings in industry (%)	0	0	0	10	12	15	18	21	23	27	34	38	42	53	63	68	71	75

NAL PUBLIC INSTITUTIONS INVOLVED IN NEEAP IMPLEMENTATION

of Energy Directorate of Energy of the Republic of Sierra Leone is the responsible national authority for the follow-up of the National Energy Efficiency Action Plan.

Energy - Traditionally, the MoE dealt mainly with issues related to electricity. But, in recent years, the Ministry's focus has been extended and other energy issues dressed. Directorate of Energy (DoE) was established by an act in 2010 under the Ministry of Energy. The DoE was set up to conduct strategic planning on energy access issues and was mandated to introduce new energy resources and ensure efficient utilization of energy resources. To further implement its objective, the DoE Renewable Energy and Energy Efficiency and rural electrification units in 2013 to address the issues of renewable energy and energy efficiency and rura . The units are charged with the responsibilities of organizing and conducting research and development in energy and energy efficiency and rural electrification.

Finance and Economic Development – Responsible for the provision of financial support needed to manage the ministry of energy administration and . MoFED is deeply involved in the pricing of petroleum products especially for the transport sector. Liquid petroleum products provide a significant revenue stream nal budget. MoFED plays a supportive role in fiscal matters

nd Water Regulatory Commission – Responsible to regulate the management and operations of the Electricity Generation and Transmission Company and the stribution and Supply Authority.

eone Electricity and Water Regulatory Commission Act of 2011[1] establishes a Commission that regulates the provision of electricity and water services and provides ncidental thereto with the power to regulate rates and charges, licensing and related matters. The Commission issues licenses for electricity and water investments ns. The Commission is a body Corporate with financial and operational autonomy.
sion includes a combination of private and public parties from the Institution of Engineers, the Labour Congress, the Sierra Leone Protection Agency, and four other ointed by the President, who will also appoint a Chairman. The Chairman and members must have recognized expertise[1] and should not have a personal interest rectly through a member of its family or business party.[1]
sion is responsible for issuing, renewing, amending and revoking licenses; registering and monitoring compliance of licensees; monitoring standards and ensuring (i) otection; and (ii) fair competition.[1] It shall set and review rates considering the criteria set forth in section 11 (2) and maintains a public register.[1] Part IV on the visions, include sources of funding: (i) government subventions; (b) payments due to the Commission and (c) monies accruing to the Commission; (d) grants, nd other contributions; (e) annual level not exceeding the 1 % of the gross operating revenue and (f) a government levy on electricity and water determined by the

regulated in Part V. Sect. 29 which stipulates that "No person shall: (i) sell, provide, arrange or otherwise supply access to electricity and water services; (ii) nstall or operate any facility for the sale, provision or supply of electricity and water services; (...) unless that person holds a license granted by the n". Sect. 30 to 37 regulate the decision making process to grant, suspend or cancel a license.

ates inspections and inspectors, who shall be appointed and coordinated by the Commission.

f the licenses refer to the "selling, provision, arrangement or supply" of electricity. Crop production for bioenergy purposes could be considered outside of the scope owever, the Act provides a good example of collective decision making commission and license scheme that could serve as basis for bioenergy investments. The rivate parties, some directly appointed by the President, may open the door for vested interests

eneration and Transmission Company – Responsible to manage the power generating stations and transmission lines in the country.

l Electricity Act established the Electricity Generation and Transmission Company, the Electricity Distribution and Supply Authority and provides for other related company's main function is to generate and transmit electricity and sell the same to the Authority subject to a power purchase agreement to be approved by the [1]In particular, its function is to (a) construct electricity generation stations, including hydro-electric schemes, (b) carry on business generally associated with electricity transmission including the West Africa Power Pool, (c) remain informed regarding the developments relating to the generation of electricity, (d) advise the minister s relating to the construction of generating stations, and the generation and transmission of electricity and such other incidental duties. In addition, the company may by the minister on matters of policy.[2]The Company has a board of directors comprised of a professional as Chairman, the Permanent Secretary of the Ministry, the cretary, a representative each of the Ministry of Marine Resources, Sierra Leone Institute of Engineers, Sierra Leone Chamber of Commerce, Industry and and the Director-General of the Company.

istribution and Supply Authority – Responsible to manage the distribution networks and sale of electricity in the country. The National Electricity Act established y Generation and Transmission Company, the Electricity Distribution and Supply Authority and provides for other related matters. The Electricity Distribution and

1.
2.

ority is established[3] with a board of directors with representation and membership similar to that of the Commission, but with the addition of a representative from associations of consumers and manufacturers.[4] The board has the control and supervision of the Authority.[5]The Authority distributes, supplies, sells, purchases, controls electricity, establishes uniform standard voltage throughout its area of supply, secures the supply of electricity at reasonable price, promotes and the economic and efficient use of electricity, and undertakes incidental responsibilities.[6] The authority shall purchase the electricity through PPA approved by the and shall supply to users subject to contract on terms set by the authority.

may give general directions to the Authority on matters of policy (s. 38).

vides for the duties of independent power producers who shall sell power to the Authority subject to the PPA as approved by the Commission: constructing tations including hydro electric schemes; keeping itself informed of developments relating to generation of electricity from natural resources available within the state r reference to the implications for the state in such developments and doing other things associating with their businesses.

5(1)(a), the minister may, by order published in the gazette, compulsorily acquire private land or rights over and under private land for use by the Authority or the bject to the payment of adequate compensation to the owner of the land. Such compensation is payable in the first instance by the government of Sierra Leone, who nbursed by the Authority or the Company as the case may be (b). The Company or Authority has the right to lop or cut trees, shrub or hedges which obstruct or n its operations, and shall give not more than fourteen days notice to the occupiers of the land.[7]The company or authority may enter any land over which it had ts.[8]

ntal Protection Agency (EPA) - EPA is responsible to enhance that environmental impact assessment measures are adhere to for energy related programmes. The closely with MoE in the designing of GEF funded projects and work to enhance their capacity in the coordination and networking of clean technology and to develop a inventory monitoring system.

Justice and the Attorney General – This ministry is responsible for the issuance of Legal opinions, vetting of contract and advice GoSL on all lega

Trade and Industry - have oversight on upstream and downstream activities on petroleum resources - exploration and marketing. The Ministry of Trade and Industry e quality of service and safety standards within the petroleum sector. Petroleum marketing and sales are handled through the Petroleum Unit (PU). Responsible to gy markets infrastructure and production and explore the feasibility to green up the value chain of the cottage industry that utilize large amount of firewood such as , cassava gari production, bakery and brick/ceramic production.

Agriculture, Forestry and Food Security, Forestry Division (FD) – continues to play a leading role in the fuelwood sector both in terms of policy formulation and olds a key role in matters related to bioenergy and crop-related energy issues. Responsible to promote micro-nursery and community forestry through tree replanting managed Agroforestry to ensure that there is sustainable supply of renewable biomass that will alleviate the pressure on natural forests.

Local Government and Rural Development - The present decentralisation of the government's functions creates possibilities and opportunities for the governance rvices in decentralised entities. Responsible to support rural electrification programmes and coordinate, implement and evaluate energy projects.

Transport and Aviation – Responsible to coordinate the energy use in the transport sector.

Works, Housing and Infrastructure – Responsible to develop codes, regulations and coordinate energy structured buildings.

5(1).
6(1).
3(1).
4.
3 (1).
9.

National Public Institution	Responsibilities
try of Energy/EGTC/EDSA/EWRC	Energy Policy, Regulation, Power Project and Operations
try of Trade and Industry/SB/SLIEPA	Standards, Codes, Certifications and Testing of ICS, Motors, Light, petroleum products etc.
try of Works, Housing and Infrastructure Development	Energy Efficient Buildings, codes, standards etc.
try of Finance and Economic Development/NRA	Financing, Funds, Duty Free Concession
try of Transport and Aviation/SLRTA	Vehicle examination for low carbon emission, more buses and road lanes
onmental Protection Agency	Green House Gas emission checks, mitigation
try of Agriculture , Forestry and Food Security/Forest on/National Protected Areas Authority (NPAA)	Forest management for wood fuel production and tree planting, agricultural and animal residues
try of Local Government and Rural Development/ Councils	Municipal waste to energy, efficient street lights,
try of Justice and the Attorney General	Preparation of Legal Instruments

ational institutions like the World Bank, Food and Agricultural Organisation, Africa Development Bank, Islamic development Bank; International and Local Non-
al Organisations, the aforementioned partner or fund energy projects. Private energy enterprises sell energy products of different types. There are both local and
panies engaged in the installations of renewable outfits e .g. the barefoot women solar engineers association of Sierra Leone, managing a solar technician training
e installations of solar home systems in inaccessible areas of our rural community, this is a show case of the Government initiative to electrify the rural communities
e their living standards for a brighter future. The Government Technical Institute has a renewable or alternative energy studies department conducting training and
ome of the technologies in the renewable energy field

National Public Institution existing	13	13	17	17	19	19	19	22	22	22	24	24	24	27	27	27	29	29
National Public Institution to revisit status	1	-	-	-	2	-	-	2	-	-	1	-	-	1	-	-	2	-
National Public Institution to establish	-	4	-	2	-	-	3	-	-	2	-	-	3	-	-	2	-	-

URES FOR ACHIEVING THE TARGETS

es to achieve the energy efficiency targets described in the following are either planned or already adopted.

ficient lighting initiative

es undertaken as part of the efficient lighting initiative include actions in the four components of the lighting initiative, namely:

nimum Energy Performance Standards

pporting policies and measures

nitoring, Verification and Enforcement

vironmentally sound management

nimum Energy Performance Standards (MEPS)

ighting MEPS on-grid and off-grid validated by ECOWAS experts should be adopted and applied in each ECOWAS member states. The process of harmonization of these MEPS is underway.

	1
le)	Adoption of Minimum Energy Performance Standards (MEPS) for on-grid and off-grid lighting devices
asure*	Energy efficiency policy/tool, awareness raising/information
5 from highest to	1
planned	Planned
(start year –end year)	2015 to 2016
of the measure	) Adopt and enforce Minimum Energy Performance Standards (MEPS) in Sierra Leone o Conduct national consultations with policy makers and other stakeholders o Pursue the ECOWAS Process of Standardisation (Ecosham) o Adopt ECOWAS Harmonised MEPS on efficient lighting and publish in the national official journal o Set up a national standards and labelling technical committee) Phase out of inefficient lighting products
p	Equipment manufacturers, retailers, end users
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI)
	Trade & Industry, Works & Infrastructure and Standards Bureau,

pporting policies and measures

olicies and measures

	2
le)	Supporting energy efficient lighting policies and measures through awareness raising campaigns targetin final consumers
asure*	Awareness raising
5 from highest to lowest)	1
lanned	Planned
(start year –end year)	2015 to 2020
of the measure	) Conduct public awareness campaigns and demonstration programmes on energy efficient lighting: o Inform consumers and other stakeholders of the social, economic and health advantages of efficient lighting o Create public awareness of the mandatory labels of on-grid and off-grid efficient lighting products o Distribute free (or subsidised) on-grid and off-grid lighting products to selected communities (with disposal of old lamps) o Develop social housing projects with efficient lighting o Develop and adopt fiscal instruments to reduce prices for on-grid and off-grid efficient lighting
p **	End users, planners, retailers, energy suppliers
g body/parties	Ministry of Energy, Ministry of Trade & Industry, Ministry of Works, House & Infrastructure
	Energy, residential, trade & industry

eate public awareness of the benefits of on-grid and off-grid efficient lighting:

- Organize public education and awareness campaigns on the advantages and benefits of efficient lighting in national and local languages on radio and television, on posters and in newspapers, and at local events.
- Organize special education programs for the youth in schools on the advantages and benefits of efficient lighting through radio and television programs, and posters.

monstrate to stakeholders the advantages and benefits of efficient lighting (compared to incandescent lamps):

- Implement free distribution of on-grid and off-grid lighting products or at subsidized cost to carefully selected communities (with retrieval and destruction of replaced incandescent lamps).
- Facilitate development of financing schemes to cover the upfront cost of on-grid and off-grid lighting products (e.g. on-bill financing).
- Facilitate bulk procurement of on-grid and off-grid lighting products (e.g. through reducing import duties).
- Promote installation of efficient lighting in all new social housing projects of national governments.

eate public awareness of the mandatory labels of on-grid and off-grid efficient lighting products:

- Educate the public and explain the information displayed on the mandatory labels of on-grid and off-grid efficient lighting - in national and local languages on radio and television, on posters and in newspapers, and at local events.

- Organize special training programs for relevant staff of Standards authority and Customs agency on the interpretation of the mandatory labels of on-grid and off-grid efficient lighting.
- Organize special training programs for relevant staff of Standards authority and accredited institutions on the test methods for on-grid and off-grid efficient lighting.

velop and adopt fiscal instruments to reduce prices of on-grid and off-grid efficient lighting:

- Conduct baseline market studies and cost-benefit analyses on on-grid and off-grid efficient lighting products in all ECOWAS countries to gather data for consultations with policy makers.
- Conduct consultations with policy makers (including Parliamentary Select Committees) on the establishment of fiscal instruments (including incentives and reduced taxes) to reduce prices of on-grid and off-grid efficient lighting products.
- Adopt reduced taxes (including import duties, GST) for on-grid and off-grid efficient lighting products
- Adopt incentive schemes (including tax holidays) to support local manufacture of on-grid and off-grid efficient lighting products.

nitoring, Verification and Enforcement

nment of a system for monitoring, verification and enforcement includes testing and certification, market studies, etc.

	3
le)	Establish a system for Monitoring, Verification and Enforcement (MV&E) of Minimum Energy Performance Standards (MEPS) for lighting systems
asure*	Capacity building
5 from highest to lowest)	1
lanned	Planned
(start year –end year)	2015-2017
of the measure	) Establish National Registries for on-grid and off-grid lighting products) Create and make functional a national registry for lighting products.) Create and make functional regional registries for lighting products) Collate data on lighting products – country of origin, importers, quantity, quality, technical data sheets) Monitor import/export of efficient lighting products into Sierra Leone (with periodic checks) & set penalties for non-compliance of standards and labelling requirements) Conduct regular census of importers, wholesalers and distributors of efficient lighting products) Conduct periodic checks on importers, wholesalers and distributors of efficient lamps – covering o Inventory of the types of lamps on the market. o Verification of the presence or absence of valid labels. o Verification of the technical characteristics of the lamps as registered. o Verification of conformity to minimum energy efficiency standards on the lamps.
p **	
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI) and Ministry of Works, House & Infrastructure (MoWHI)
	Energy, trade & industry and residential

vironmentally sound management

an environmentally sound management focus on collecting and safely disposing of used lighting fixtures.

	4
le)	Environmentally sound management through the implementation of a collection and disposal system for energy efficient light bulbs
asure*	capacity building, awareness raising/information.
5 from highest to lowest)	1
lanned	Planned
(start year –end year)	2015 to 2030
of the measure	) Create public awareness of the environmentally sound collection and disposal of on-grid and off grid efficient lamps and batteries: o Organize public education and awareness campaigns on the rationale behind and methods for environmentally sound collection and disposal of used lamps and batteries in national and local languages through radio, television, posters/leaflets, newspapers, SMS messages, at social events markets and through celebrities o Organize special education programmes for the youth in schools) Conduct national consultations with policy makers and other stakeholders: o Consultations with utilities, selected shops, schools and other stakeholders on the development of national regulations for environmentally sound disposal of spent efficient lamps and batteries including ▪ Development of national collection systems for spent efficient lamps and batteries ▪ Involvement of informal sector in spent lamps collection ▪ Incentives for consumers and spent lamp collectors o Application of Extended Producer Responsibility principle o Setting up Collection & Recycling Service Organisations (CRSOs)) Develop and adopt national regulations for environmentally sound disposal of spent on-grid and off-grid efficient lamps and batteries: o Implement ECOWAS Regional Regulation for environmentally sound disposal of spent efficient lamps and batteries, application of Extended Producer Responsibility principle and setting up CRSOs: o Develop and adopt national regulations or integrate the ECOWAS Regional Regulation in the existing regulation on disposal of hazardous waste. o : o Design a national collection system for spent efficient lamps and batteries with ▪ Involvement of the informal sector in collecting spent lamps

	▪ Incentives for consumers and spent lamp collectors J Implement a national collection systems for spent on-grid and off-grid efficient lamps and batteries: o Adopt and implement a national collection system for spent efficient lamps and batteries J Develop and establish a commercially viable recycling and disposal facility o Establish Collection and Recycling Service Organisations o Invite bids and select consultant for development of technical specifications, design and business plan of commercially viable recycling and disposal facility for spent on-grid and off-grid efficient lamps and batteries. o Invite bids and select contractor to build and operate regional recycling and disposal facility for spent on-grid and off-grid efficient lamps and batteries. o Commission regional recycling and disposal facility(ies) for spent on-grid and off-grid efficient lamps and batteries
p	End users, public administration, equipment manufacturers, retailers,
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI), Environmental Protection Agency (EPA), Ministry of Agriculture, Forestry & Food Security (MoAFFS), Ministry of Lands, Country Planning & Environment (MoLCPE)
	Environmental Protection Agency (EPA), Trade & Industry City Counciles and Energy Sector

andards and labelling initiative

es undertaken as part of the energy efficiency standards and labelling initiative include, among others:

licies and tools

	1
le)	Market assessment of key-energy using appliances
asure*	
5 from highest to	1
planned	Planned
(start year –end year)	2015 - 2020
of the measure	) Market Assessment: o Collection and analysis of data on pricing and sales, market penetration, leading brands, baseline performance of energy-using equipment, efficiency improvement potential, usage characteristics, etc. o Collection of additional market data and baseline usage as well as performance data for selected product categories, as necessary to inform a decision on efficiency performance levels, for instance through field surveys (e.g. end-use metering studies) and laboratory testing. o Conduct consumer research on efficiency label design options. Evaluate local/regional socio-cultural factors) Develop standards and labels together with ECOWAS: o Conduct national consultations with policy makers and other stakeholders o Pursue the ECOWAS Process of Standardisation (Ecosham) o Adopt ECOWAS Harmonised MEPS on efficient appliances and publish them in the national official journal o Set up a national standards and labelling technical committee o Design an implement complementary policy, regulatory and educational measures that support the enforcement of standards and labelling programmes.) Impact Assessment: o Impact assessment of the costs and benefits of the proposed standards (energy and money savings, environmental benefits etc.) and assessment of energy efficiency improvement potential for selected appliances.) Diffusion of EE appliances: o Develop and introduce programs to encourage or require public-sector and large-scale private-sector procurement of energy efficient products.
p **	Public administration, equipment manufacturers, retailers
g body/parties	Ministry of Energy (MoE) and Ministry of Trade & Industry (MoTI),
	Energy, Trade & Industry

pacity building

	2
le)	Capacity Building
asure*	
5 from highest to	1
lanned	Planned
(start year –end year)	2015 - 2020
of the measure	) Identify the needs for technical support by local manufacturers of lighting products, ovens, fans and motors) Training and information workshops to educate and build capacity among stakeholders: o Training workshops to build capacity on standards and labelling in the national standards bodies and energy authorities o Training workshops in certification procedures, compliance monitoring, and enforcement programs. o Training of importers, retailers and other relevant stakeholders such that they actively support the initiative.) Strengthen and enhance national institutions. Institutions must have a mandate, an adequate budget, a well-trained staff, and sufficien resources to effectively oversee the development and implementation of the programmes. In this context, the cooperation betwee energy authorities and authorities in charge of standards shall be strengthened.) Develop capacity-building materials for S&L program managers and stakeholders.) Develop concepts for a communication and outreach strategy based on international experience and best practices, with a particula focus on disseminating information about the benefits of using new products instead of second-hand ones.) Conceive and conduct awareness raising campaigns for national authorities, manufacturers, distributors, specialized professionals such as engineers and technicians and the general public.) Consult with political bodies and utilities on drafting incentives schemes to promote the purchase of energy-efficient appliances.
p **	Public administration, equipment manufacturers, retailers
g body/parties	Ministry of Energy (MoE) and Ministry of Trade & Industry (MoTI),
	Energy, Trade & Industry

wareness raising

ble 22

	3
le)	Awareness raising
asure*	
5 from highest to	1

lanned	Planned
(start year –end year)	2015 - 2020
of the measure	) Develop concepts for a communication and outreach strategy based on international experience and best practices, with a particula focus on disseminating information about the benefits of using new products instead of second-hand ones.) Conceive and conduct awareness raising campaigns for national authorities, manufacturers, distributors, specialized professionals such as engineers and technicians and the general public. o For example, messaging may be directed to: governments, institutions, and other stakeholders about the benefits o S&L, obligations and expectations about the process; to consumers to raise awareness and understanding of the efficiency label; to manufacturers and importers to encourage a culture of compliance.
p **	Public administration, equipment manufacturers, retailers
g body/parties	Ministry of Energy (MoE) and Ministry of Trade & Industry (MoTI),
	Energy, Trade & Industry

ancial/fiscal measures

struments to finance energy efficient equipment shall be developed and introduced. These may include customer credit schemes, demand-side-management by ges to the tax systems, etc. to provide incentives for energy efficient products or increases in duties for inefficient products.

	4
le)	Financial/fiscal measures
asure*	
5 from highest to	1
lanned	Planned
(start year –end year)	2015 - 2020
of the measure	) Consult with political bodies and utilities on drafting incentives schemes to promote the purchase of energy-efficient appliances.) Develop and introduce innovative instruments to finance energy efficient equipment. These may include customer credit schemes demand-side-management by utilities, changes to the tax systems, etc. to provide incentives for energy efficient products or increases in duties for inefficient products.
p **	Public administration, equipment manufacturers, retailers
g body/parties	Ministry of Energy (MoE) and Ministry of Trade & Industry (MoTI),
	Energy, Trade & Industry

ergy efficient buildings initiative

es undertaken as part of the energy efficient buildings initiative, include:

licies and tools on energy efficiency in buildings

ble 24

	1
e)	Introduction of energy efficiency criteria into the national building code and establishing a link to ECOWAS directive for energy efficiency in buildings (EDEEB)
sure*	Energy efficiency building policy/tool,
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2016
f the measure	Develop and implement a national building code tailored to local conditions and construction practices, that requires or encourages a high level of energy performance of new buildings; this should include minimum energy efficiency standards in buildings under the building permit procedure; criteria of tropical architecture and the link to urban planning. The national building code should be developed in accordance with the ECOWAS Directive on Energy Efficiency in Buildings (EDEEB). Specifically, compatibility with the EDEEB should be ensured in at least the following aspects: a. A common general framework to measure and calculate energy performance of buildings; b. Minimum requirements for new buildings energy performance; c. Minimum requirements for existing buildings energy performance subject to major renovation and requiring project approval; d. Minimum requirements for renewable energy sources used in new and existing buildings subject to major renovation and requiring project approval; e. Buildings energy certification.
	End users, public administration, planners, architects, installers,
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI) and Ministry of Lands, Country Planning & Environment (MoLCPE)
	Residential sector, service sector

	2
e)	Develop and implement a system to award energy performance certificates for public buildings in Sierra Leone
sure*	Policy/tool

o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	) Development of an accreditation process to accredit bodies that will issue the energy performance certificate) Development of a standard for energy performance certificates establishing reference values such as minimum energy performance requirements for relevant building categories) Development of a national building energy performance register: Where an energy performance certificate is issued, such information contained in the energy performance certificate will be required to be submitted to a national building energy performance register to be established and maintained by the pertinent authority) Regular inspection of air-conditioning and water heating systems in buildings) Control systems for energy performance certificates and inspection reports
	Manufacturers of construction materials, architects, engineers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI) and Ministry of Lands, Country Planning & Environment (MoLCPE)
	Residential, service, construction sector

pacity building on energy efficiency in buildings

	1
e)	Capacity building, institutional strengthening and training measures on energy efficiency for the buildings value chain
sure*	Capacity building
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	Training on energy efficiency in buildings, in order to ensure the availability of qualified staff to design, construct and operate energy efficient buildings.) Development of qualification, accreditation and certification schemes for installers of energy–related building elements.) Capacity building and institutional strengthening for public authorities: o In order to ensure that public authorities make informed decisions and are in the position to conceive, develop, implement and monitor (inspection, certification, etc.) policies and programmes on energy efficiency in buildings.

	o Strengthening the capability of national authorities to enforce national standards and regulations in the buildings sector. J Training for building professionals to comply with the energy efficiency standards in the building code, through use of bio-climatic technologies J Development of local industries to produce building materials and equipment for high efficiency buildings J Showcase bio-climatic architectural adapted to local climate conditions, through demonstration projects
	End users, public administration, planners, architects, engineers, installers, manufacturers of construction materials
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI) and Ministry of Lands, Country Planning & Environment (MoLCPE)
	Works & Infrastructures, City Councils and Trade & Industry

	2
e)	Promotion of the use of local materials in construction
sure*	Capacity building
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	J Development of a catalogue of local building materials, construction, monitoring and evaluation of demonstration buildings J Establishment of testing facilities to ensure that products comply with technical requirements
	Manufacturers of construction materials, architects, engineers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI) and Ministry of Lands, Country Planning & Environment (MoLCPE)
	Construction

vareness raising

ble 28

	1
e)	Create Energy efficiency in schools
sure*	Capacity building
o 5 from highest to	1
anned	Planned

start year –end year)	2015 to 2020
f the measure	Develop school curriculum on energy efficiency knowledge
	Learning institutions, engineers
g body/parties	Ministry of Energy (MoE), Ministry of education, science & technology, Schools, Colleges and Universities
	Education sector,

	2
e)	Develop a marketing and awareness raising programme:
sure*	Capacity building
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	identify who are the major stakeholders, what are their main concerns and how they feel about energy efficiency programmes; Carry out the programme on marketing energy efficiency in buildings with actions such as: o Convince opinion makers to invest in their own energy efficient buildings (footballers, etc.). o Use the positive image of well-known personalities such as footballers or musicians, to promote energy efficiency. o Marketing of pilot projects that are accessible to the public. o Promote energy labelling of buildings to create awareness.
	Learning institutions, engineers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry, Ministry of Works, Housing and Infrastructure
	Education sector, Works & Infrastructure,

nancial instruments for energy efficiency in buildings, in order to facilitate investments in energy efficiency measures:

ble 30

	1
e)	Establish Financial instrument for energy efficiency in buildings

sure*	Finance
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	Design and implementation of financial incentives for building owners at the national level o Technical assistance to key government bodies and actors in the financial sector. .
	Financial institutions, investors, marketers
g body/parties	Ministry of Finance and Economic Development, Ministry of Trade & Industry
	Finance and Trade sector

ctricity distribution initiative

easures to incentivise energy efficiency in electricity distribution, include: Policy and regulatory framework

to the efficient distribution of electricity, diagnostic studies will be conducted to determine the level of losses, and identify key actions to reduce them.

	1
le)	Introduction of improved management practices and technical measures to diminish losses in the electricity distribution system
asure*	Energy efficiency policy/tool,
5 from highest to lowest)	1
lanned	Planned
(start year –end year)	2015 to 2025
of the measure	Introduction of: - Management practices related to billing and maintenance, such as optimised billing and regular inspection of lines - Shortened billing cycle, including thorough tools that produce a bill immediately upon meter reading - Regular inspection of lines to identify and remove illegal, unsafe connections, and to encourage all users to become paying customers - Regular preventive maintenance of all components of the distribution system in order to assure reliable power supply. This includes, notably, upgrading of lines and transformers that are operating near capacity that show signs of weakness or that are outdated and inefficient - Installation of pre-paid meters to improve bill collection and relations with clients - Installation of high voltage distribution systems that improve power quality and reduce theft

	) Power factor correction to reduce losses through the installation of capacitor banks on client premises where they are needed
p **	End users, public administration, planners, installers, energy suppliers
g body/parties	Ministry of Energy (MoE), Electricity & Water Regulatory Commission (EWRC), Electricity Distribution & Supply Authority (EDSA and Electricity Generation & Transmission Company (EGTC)
	Energy

pacity building

	2
e)	Promotion of the use of Preventive Maintenance of all distribution system components
sure*	Capacity building
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	Upgrading of lines and transformers that are operating near capacity, that show signs of weakness or that are outdated and inefficient.
	Manufacturers of distribution materials, engineers
g body/parties	Ministry of Energy (MoE), Electricity Distribution Service Authority and Electricity Generation Transmission Company
	Energy,

wareness raising

	2
e)	Stakeholders awereness
sure*	Capacity building
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020

f the measure	Build awareness among stakeholders of the issues, opportunities and obstacles in improving power distribution.
	Manufacturers of distribution materials, engineers
g body/parties	Ministry of Energy (MoE), Electricity Distribution Service Authority and Electricity Generation Transmission Company
	Energy

nancial/fiscal measures:

	1
e)	Support to investment to encourage power factor correction
sure*	Finance
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	Financial/fiscal measures will include: o Tariff measures to encourage power factor correction. o Support for investment in high efficiency power system equipment that improve power quality and reduce theft
	Manufacturers of distribution materials, engineers
g body/parties	Ministry of Energy (MoE), Electricity Distribution Service Authority and Electricity Generation Transmission Company
	Energy

ergy efficiency in the industrial sector

es to enhance energy efficiency in the industrial sector comprise:

ergy efficiency policies and tools

	1
e)	National programs to implement an ISO-compatible Energy Management Standard (EnMS) for Industry (ISO 50001)
sure*	Energy efficiency policy/tool
o 5 from highest to	1

anned	Planned
start year –end year)	2015 to 2025
f the measure	) Develop and implement a national Energy Management Standard compatible with ISO-50001 in Sierra Leone o Conduct national stakeholder consultations for the development of an EnMS for industry in Sierra Leone) Implement pilot Energy Management Systems and System Optimization in industrial facilities) Develop energy management benchmarking and award programmes) Develop and implement measurement and verification of compliance with Energy Management Systems (EnMS) o Create capacity within relevant organizations to develop and implement a M&V programme of compliance with EnMS o Establish a recognition scheme for EnMS experts and organization and companies compliant with ISO 50001 o Launch an accreditation programme for Energy Management Systems (EnMS) in accordance with the ISO5001 standard o Establish (voluntary) reporting programmes on energy use in industry) Introduce best-practice information, dissemination and recognition programmes for industrial energy efficiency
	Industrial users, public administration, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Electricity & Water Regulatory Commission (EWRC), Electricity Distribution & Supply Authority (EDSA), Electricity Generation & Transmission Company (EGTC) and UNIDO
	Industry

	2
e)	Energy efficient motors programme
sure*	Energy efficiency policy/tool
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	) Implement a program for replacement of inefficient motors such as: o Old motors that have poor or no rewind records. Typically, efficiency is lost when motors are rewound without taking enough care of the magnetic core. o Excessively oversized motors that run at 50% and below their rated load. Oversized electric motors are a result of plant designers and users requirement of safety factors to ensure plant availability. o Replacing standard motors with energy efficient ones giving users a better variable load handling ability

	⁾ Motor users are required to return their old motor being replaced (with rotor and stator intact) to the motor suppliers. ⁾ Introduce subsidies for replacing old inefficient electric motors with new efficient ones. Electric motor users in industry would receive an instant once-off rebate on the purchase price of a new efficient motor when purchasing it to replace an old inefficient motor. ⁾ These old motors are scrapped according to environmental regulations after which a disposal certificate is submitted to the programme management. This step ensures that these energy guzzling motors do not re-enter the market. ⁾ The programme will be offered to customers via the accredited suppliers on the programme. Local motor suppliers will be encouraged to register to participate in the energy efficient motors programme. The registration process verifies the supplier's product accreditation, technical specifications and financial position ⁾ Capacity building to industry personnel on energy efficient motors, adequate sizing and maintenance. ⁾ Conduct random process compliance audits. ⁾ Install a system for Monitoring and Verification (M&V) of the savings achieved with energy efficient motor programme in Sierra Leone
	Industrial users, public administration, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Electricity & Water Regulatory Commission (EWRC), Electricity Distribution & Supply Authority (EDSA), Electricity Generation & Transmission Company (EGTC) and UNIDO
	Industry

	1
e)	Establish regulatory framework and energy management benchmark
sure*	Policy
	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	⁾ Enhanced regulatory framework facilitating increased implementation of energy efficiency in the industrial sector, in both large as well as smaller industries. ⁾ Implement energy management benchmarking and award programmes. ⁾ Pursue voluntary energy efficiency agreements between industry and government, through agreed upon target for energy savings. ⁾ Promote the use of cogeneration. ⁾ Develop industrial energy database and energy consumption benchmarks: o Promote plant-level energy monitoring, o Establish database on industrial energy use, o Formulate energy consumption benchmarks for subsectors.

	Industry
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry, Ministry of Works, Housing and Infrastructure
	Energy, Industry and Works & Infrastructure sectors,

pacity building for improving energy efficiency

	3
e)	Capacity building on industrial energy efficiency
sure*	Energy efficiency policy/tool
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	) Energy Management Systems (EnMS) Expert Training) System Optimization (SO) Expert Training (steam, pumps, compressed air, etc.)) Development and provision of tools to assist industry in developing and implementing EnMS and system optimization projects) Training of industry energy managers and engineers) Provide incentives and qualify personnel for energy audits) Establish cleaner production centers to facilitate the supply of clean and efficient energy services) Develop and implement certification and accreditation schemes or equivalent qualification schemes (incl. if applicable, training programmes) for providers of energy services, energy audits and energy managers
	Industrial users, public administration, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Electricity & Water Regulatory Commission (EWRC), Electricity Distribution & Supply Authority (EDSA), Electricity Generation & Transmission Company (EGTC) and UNIDO
	Industry

wareness of energy efficiency

ble 39

	1
e)	Establish an awareness raising programmes for energy efficiency
sure*	Capacity building
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	• Create awareness among SMEs and larger industries and policy makers of the benefits of energy efficiency in the industrial sector. • Raise awareness on sources of financing for industrial energy efficiency and EE project financing (e.g. organise seminars and networking meetings on local sources of financing for industrial energy management and energy optimization projects).
	Financiers', marketters, investors, banking Institutions, developers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry, Ministry of Finance and Economic Development, Electricity & Water Regulatory Commission
	Energy, Trade & Industry, Finance, Regulators and Private sectors.

nancial/fiscal mechanisms

ble 40

	1
e)	Develop financial/fiscal mechanism
sure*	Fund Raising and Financing Mechanism
o 5 from highest to	1
anned	Planned
start year –end year)	2015 to 2020
f the measure	• Adapt fiscal mechanisms and energy tariffs to encourage energy savings. • Assist financial institutions and banks in the creation of financial instruments for industrial energy efficiency. • Promote energy service performance contracts (ESPC) through ESCOs: o Legislative or regulatory instruments that facilitate the implementation of energy saving performance contracts (ESPCs) by Energy Service Companies (ESCOs) can help overcome barriers for carrying out energy efficiency measures and provide risk-management. These instruments normally condition payments on a performance

	guarantee, thus reducing risk for the entity. One critical element in the implementation of ESPCs is capacity building of public agencies, local financial institutions and ESCOs. .
	Financiers', marketers, investors, banking Institutions, developers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry, Ministry of Finance and Economic Development, Electricity & Water Regulatory Commission
	Energy, Trade & Industry, Finance, Regulators and Private sectors.

oss-cutting measures

g (also called horizontal) measures (e.g. taxes, research and development, general information campaigns) include:

	1
e)	Private investment in energy efficiency
sure*	Energy efficiency policy/tool, capacity building, awareness raising/information or financial/fiscal. Financial and fiscal measures included fiscal incentives, tax exemptions, soft loans, subsidies, rebates, investment deduction schemes,
o 5 from highest to	1
anned	Planned
start year –end year)	2015 -2016
f the measure	Establish a level playing field for private sector investment in energy efficiency
	Investors, end users, public administration, planners, architects, installers, equipment manufacturers, retailers, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Finance and Economic Development, Ministry of Works, House & Infrastructure (MoWHI), Environmental Protection Agency (EPA), Ministry of Agriculture, Forestry & Food Security (MoAFFS), Ministry of Lands, Country Planning & Environment (MoLCPE), Ministry of Information & Communication, Ministry of Education, Science & Technology, Ministry of Foreign Affairs, International Cooperation, Non-Government Organisation's, Ministry of Health and Sanitation (MoHS), Ministry of Water Resources (MoWR) and Sierra Leone Chamber of Commerce.
	Energy and Finance

	2
e)	Monitoring, Enforcement and Evaluation of energy efficiency activities
sure*	Energy efficiency policy/tool, capacity building, awareness raising/information

5 from highest to lowest)	1
anned	Planned
start year –end year)	2015-2016
f the measure	) Develop performance tracking scheme to monitor and evaluate energy efficiency works) Penalize defaulters of energy efficiency actions
	Investors, end users, public administration, planners, architects, installers, equipment manufacturers, retailers, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI), Environmental Protection Agency (EPA), Ministry of Agriculture, Forestry & Food Security (MoAFFS), Ministry of Lands, Country Planning & Environment (MoLCPE), Ministry of Information & Communication, Ministry of Education, Science & Technology, Ministry of Foreign Affairs, International Cooperation, Non-Government Organisation's, Ministry of Health and Sanitation (MoHS), Ministry of Water Resources (MoWR) and Ministry of Justice (MoJ)
	energy

	3
e)	Competitive energy markets with appropriate regulation
sure*	Energy efficiency policy/tool, capacity building, awareness raising/information or financial/fiscal. Financial and fiscal measures included fiscal incentives, tax exemptions, soft loans, subsidies, rebates, investment deduction schemes,
o 5 from highest to	1
anned	Planned
start year –end year)	2015 - 2018
f the measure	Develop energy regulatory commission in the Ministry of Energy Develop high efficiency standard in GoSL procurement to achieve value for money
	Investors, end users, public administration, planners, architects, installers, equipment manufacturers, retailers, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI), Environmental Protection Agency (EPA), Ministry of Agriculture, Forestry & Food Security (MoAFFS), Ministry of Lands, Country Planning & Environment (MoLCPE), Ministry of Information & Communication, Ministry of Education, Science & Technology, Ministry of Foreign Affairs, International Cooperation, Non-Government Organisation's, Ministry of Health and Sanitation (MoHS), Ministry of Water Resources (MoWR) and National Public Procurement Authority (NPPA)
	energy

	4
e)	Data Collection and Indicators
sure*	capacity building, awareness raising/information
o 5 from highest to	1
anned	Planned
start year –end year)	2015 - 2017
f the measure	• Establish strong data base unit in the Ministry of Energy • Carryout yearly data validation exercise nationwide Develop inter-departmental link with Sierra Leone Statistic
	Investors, end users, public administration, planners, architects, installers, equipment manufacturers, retailers, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Finance and Economic Development (MoFED) Ministry of Trade & Industry (MoTI), Ministry of Works, House & Infrastructure (MoWHI), Environmental Protection Agency (EPA), Ministry of Agriculture, Forestry & Food Security (MoAFFS), Ministry of Lands, Country Planning & Environment (MoLCPE), Ministry of Information & Communication, Ministry of Education, Science & Technology, Ministry of Foreign Affairs, International Cooperation, Non-Government Organisation's, Ministry of Health and Sanitation (MoHS), Ministry of Water Resources (MoWR), Ministry of Social Welfare, Gender & Children Affairs (MoSWGCA) and Statistic Sierra Leone (SSL)
	Energy

	5
e)	Tax Incentives
sure	Energy efficiency policy/tool, Financial and fiscal measures included fiscal incentives, tax exemptions, soft loans, subsidies, rebates, investment deduction schemes,
o 5 from highest to	1
anned	Planned
start year –end year)	2015-2016
f the measure	Establish duty free tax exemption and other financial incentives
	Investors, end users, public administration, planners, architects, installers, equipment manufacturers, retailers, energy suppliers
g body/parties	Ministry of Energy (MoE), Ministry of Trade & Industry (MoTI) and Ministry of Finance and Economic Development (MoFED)
	Finance

tional Public Institution

tutional measures for the improvement of energy efficiency in Sierra Leone comprise the following:

	1
e)	Research and Development (R&D)
sure	Capacity building, awareness raising/information
o 5 from highest to	1
anned	Planned
start year –end year)	2015 - 2017
f the measure	*Develop R & D institutions for energy efficiency advancement * Establish new energy efficiency programmes for future researchers
	Investors, end users, public administration, planners, architects, installers, equipment manufacturers,
g body/parties	Ministry of Energy (MoE), Ministry of Information & Communication, Ministry of Education, Science & Technology, Non-Government Organisation's and the University of Sierra Leone (USL)
	Tertiary Institutions

ULATION WITH REGIONAL INITIATIVES

S region has a series of on-going regional policies and initiatives on the field of energy efficiency:
e ECOWAS Energy Efficiency Policy (EEEP)
OWAS Energy Efficiency Programme (SEEA-WA);
e West Africa Clean Cooking Alliance (WACCA)
e ECOWAS Programme on Gender Mainstreaming in Energy Access (ECOW-GEN)
e ECOWAS Solar Thermal Programme
ecific EE Initiatives

- Standards and Labelling Initiative
- Efficient Lighting Initiative
- Energy Efficiency in Buildings Initiative
- High Performance of Distribution of Electricity Initiative
- Safe, Sustainable and Clean Cooking Initiative

f these regional initiatives can be found in Annex I of this Plan.

tween these programmes and the proposed measures in this plan will be exploited and the country will actively participate in the regional initiatives.

ARATION OF THE NATIONAL ENERGY EFFICIENCY ACTION PLAN

istry of Energy together with stakeholder (including MDAs , local, national and development partners) held several pre-meetings and participated at the inception . An energy technical experts group, energy taskforce, MDAs, development partners, civil society, media, academics, chiefs, women group, industries, the private banking institutions, the Chamber of Commerce etc. participated during the validation workshop in the preparation of the National Energy Efficiency Action Plan.

l and local authorities were involved in the preparation of the plan through consultations, workshops, meetings and communicating to them by letters and nes.

MENTATION AND MONITORING OF THE IMPLEMENTATION OF THE NATIONAL EFFICIENCY ENERGY ACTION PLAN

of Energy Directorate of Energy of the Republic of Sierra Leone is the responsible national authority for the follow-up of the National Energy Efficiency Action Plan. onitoring framework for energy efficiency measures has been developed. A monitoring system, including indicators for individual measures and instruments, will be fter approval and validation of the action plan. Regional and/or local energy efficiency strategies, compliance mechanisms and responsible authorities at relevant discussed with regard to the implementation of the NEEAP.

Definition of Terms Used in the NEEAP

escribed here have been organised alphabetically.

fuel obtained from the fibre which remains after juice extraction in sugar processing

odegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related cluding fisheries and aquaculture, as well as the biodegradable fraction of industrial and municipal waste. The uses of biomass for energy are very diverse: from the w-efficiency burning of wood in open fires for cooking purposes to the more modern use of wood pellets for the production of power and heat, and the use of d bioethanol as a substitute for oil-based products in transport.

apid Transit Systems

oofed construction having walls, for which energy is used to condition the indoor climate; a building may refer to the building as a whole or parts thereof that have ed or altered to be used separately; buildings' definition includes individual houses and multi-family houses, commercial buildings, public buildings.

elope: it includes walls, roof, the bottom floor, windows, doors, all the elements that limits the inside and the outside of the building.

ct Fluorescent Lamp

e solid residue from the carbonisation of wood or other vegetal matter through pyrolysis. The amount of biomass (usually fuelwood) necessary to yield a given harcoal depends mostly on three factors:

rent wood density – the principal factor in determining the yield of charcoal from fuelwood is parent wood density, since the weight of charcoal can vary by a factor 2 for equal volumes
oisture content - moisture content of the wood also has an appreciable effect on yields - the drier the wood, the greater is the yield - ; and
e means of charcoal production: charcoal is produced in earth-covered pits, in oil drums, in brick or steel kilns and in retorts. The less sophisticated means of oduction generally involve loss of powdered charcoal (fines), incomplete carbonization of the fuelwood and combustion of part of the charcoal product, resulting in wer yields.

on-efficient charcoal production methods: traditional charcoal production methods include open pits, oil drums and kilns with lower efficiencies. In the ECOWAS mainly produced by traditional methods in the informal sector (e.g. open pits and kilns) which are inefficient (60-80% of the energy in the wood is lost) and has he health and on the environment.

rcoal production: efficient charcoal is the terminology used on this template for the charcoal produced by modern methods that are more efficient than traditional odern methods use sealed containers and have higher efficiencies and thus higher yields. Within the EREP, under the targets for domestic cooking, a target for rcoal production is set: 60%/100% of the charcoal production should be by improved carbonisation techniques (yield >25% in 2020 and 2030, respectively. In this MS is asked to set out its target and trajectory for efficient charcoal production. This is calculated by dividing the quantity of charcoal produced by improved n techniques with yield superior to 25% in tonnes by the total charcoal production in tonnes.

n (also known as combined heat and power) is the simultaneous production of electricity and process heat from a single dynamic plant.

ction & Recycling Service Organisations

ency: It means the ratio of output of performance, service, goods or energy, to input of energy

rmance of a building: the amount of energy actually consumed or estimated to meet the different needs associated with a standardised use of the building, which inter alia, water heating, cooling, ventilation, use of daylight, shadowing systems and components, as well as electricity consumption for lighting and other uses as omestic appliances, etc. This amount shall be reflected in one or more numeric indicators which have been calculated, taking into account insulation, technical and haracteristics, design and positioning in relation to climatic aspects, solar exposure and influence of neighbouring structures, own-energy generation and other ding indoor climate, that influence the energy demand;
ngs: means an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency t measure, whilst ensuring normalisation for external conditions that affect energy consumption

ency: is a multidisciplinary concept which aims to increase energy savings from upstream to downstream in the energy chain. It is energy efficient to reduce energy for the same type of product or service.

ce: It means the physical benefit, utility or good derived from a combination of energy with energy-efficient technology or with action, which may include the maintenance and control necessary to deliver the service, which is delivered on the basis of a contract and in normal circumstances has proven to result in verifiable able or estimable energy efficiency improvement or primary energy savings

WAS Energy Efficiency Policy

sity: energy efficiency means the ratio of energy use to economic output of goods and services. Energy intensity is generally considered to be a good macro-dicator of energy efficiency. It can be calculated for an entire nation, or for specific economic sectors. The unit of energy intensity is an energy unit divided by a ue, for instance:

e/GDP at year 2005 USD at purchasing power parity.

WAS Renewable Energy Policy

gy intensity: is the ratio between the Total Primary Energy Supply (TPES) and the Gross Domestic Product (GDP) calculated for a calendar year. The gross inland of energy is calculated as the sum of the gross inland consumption of the different sources of energy. To monitor trends, GDP is in constant prices to avoid the ation, base year 2005.

gy Management System

g performance contracts (ESPCs): An energy savings performance contract is an agreement between a building owner and an energy services company (ESCO) fication, evaluation, recommendation, design and construction of energy conservation measures, including a design-build contract, that guarantee energy savings ce.

ce Company (ESCO): The ESCO approach combines a financial service with technical services, thus simplifying energy savings for the user, by:

posing energy efficiency measures adapted to the user's needs;
ancing the purchase of necessary equipment;
talling the equipment;
some cases, operating and maintaining the equipment;
asuring the energy savings achieved, and billing the customer for a part of the savings.

Consumption: is the total energy consumed by end users, such as households, industry and agriculture. It is the energy which reaches the final consumer's door s that which is used by the energy sector itself. This includes electricity and fuels (such as oil, gas, coal, woodfuel etc.).

Domestic Product. To monitor trends, GDP is in constant prices to avoid the impact of inflation, base year 2005.

ur (GWh): 1,000,000,000 watt-hours.

xport: Import and export comprise quantities having crossed international boundaries.

okstoves (also called clean/efficient cookstoves): is a device that is designed to consume less fuel and save cooking time, convenient in cooking process and keless environment in the kitchen or reduction in the volume of smoke produced during cooking against the traditional stove; and thus addressing he health and al impacts associated with traditional cookstoves. Traditional cookstoves (open fires and rudimentary cookstoves using solid fuels like wood, coal, crop residues dung) are inefficient, unhealthy, and unsafe, and inhaling the acrid smoke and fine particles they emit leads lead to severe health problems and death. Traditional also place pressure on ecosystems and forests and contribute to climate change through emissions of greenhouse gases and clack carbon. REP targets are set for improved cookstoves, as the pressure on the ECOWAS woodland will grow exponentially. Thus the policy includes the banning of inefficient 2020, enabling 100% of the population of the urban areas to use high efficient wood and charcoal stoves (with efficiencies higher than 35%) from 2020 onwards the rural population to use high efficient charcoal stoves from the same date on. In this template the MS is asked to set a target for improved cookstoves measured he % of the population that uses efficient cookstoves. This is estimated by dividing the number of inhabitants that use improved cookstoves by the total number of f the country.

ding: Traditional buildings or buildings built without legal authorisation;

): 1,000watts

r (kWh): 1,000watt-hours.

nd tonnes of oil equivalent

mitting Diodes

ed petroleum gas

ation: Renovation affecting the walls , roof and the bottom floor(for example wall insulation), the system (for instance a change of the air conditioning system) but tion of a new room with a useful area of more than 12 m^2.

W): 1,000,000 watts

our (MWh): 1,000,000 watt-hours

alternatives (for cooking): known as non-conventional or advanced fuels, these are any materials or substances that can be used as fuels for cooking, other than solid fuels such as coal, fuelwood and charcoal. These alternatives cover Liquefied petroleum gas (LPG), biogas, ethanol, solar power (e.g. solar cookers) and this template improved cookstoves are not considered within the modern fuel alternatives, as they are object of a separate analysis in this template.

AS) Member States

al electrical losses: in electricity distribution consist of theft and non-payment for electricity (including unpaid bills, absence of billing, billing calculation errors and nistakes). Non-Technical losses are caused by actions external to the physical power system.

power parities (PPPs): are the rates of currency conversion that equalise the purchasing power of different currencies by eliminating the differences in price levels ntries

ducing Emissions from Deforestation and Forest Degradation (REDD) is an effort to create a financial value for the carbon stored in forests, offering incentives for countries to reduce emissions from forested lands and invest in low-carbon paths to sustainable development. "REDD+" goes beyond deforestation and forest and includes the role of conservation, sustainable management of forests and enhancement of forest carbon stocks.

s: or solar oven is a device which uses the energy of direct sun rays (which is the heat from the sun) to heat, cook or pasteurize food or drink.

l: use of solar thermal energy to produce heat, for instance for produce hot water, or to provide cooling services;

sses in power system are caused by the physical properties of the components of the power system. The most obvious example is the power dissipated in lines and transformers due to internal electrical resistance. Technical losses can be divided into transmission losses, occurring in the high voltage part of electricity stribution losses, occurring between the last power sub-station and the user's meter.

f oil equivalent

y Energy Supply (TPES) is made up of: Indigenous production + imports - exports - international marine bunkers - international aviation bunkers +/- stock changes.

en.lighten initiative: The United Nations Environment Programme (UNEP)-Global Environment Facility (GEF) en.lighten initiative was established in 2009 to global market transformation to environmentally sustainable, energy efficient lighting technologies, as well as to develop strategies to phase-out inefficient t lamps to reduce CO_2 emissions and the release of mercury from fossil fuel combustion. The en.lighten initiative serves as a platform to build synergies among stakeholders; identify global best practices and share this knowledge and information; create policy and regulatory frameworks; address technical and quality encourage countries to develop National and/or Regional Efficient Lighting Strategies.

llars

area: floor area of dwellings measured inside the outer walls, excluding cellars, non-habitable attics and, in multi-dwelling houses, common areas

: the equipment, distribution systems and terminals that provide, either collectively or individually the processes of ventilating or air conditioned to a building or a building
Added Tax

est African Clean Cooking Alliance

Wh): a measure of electric energy equal to the electrical power multiplied by the length of time (hours) the power is applied

REGIONAL INITIATIVES AND ACTIONS IN ENERGY EFFICIENCY

ENERGY EFFICIENCY PROGRAMME

AS Centre for Renewable Energy and Energy Efficiency (ECREEE) initiated the ECOWAS energy efficiency programme by soliciting financial support from the nion (EU). The EU sponsored programme is dubbed Supporting Energy Efficiency for Access in West Africa (SEEA-WA). The SEEA-WA project is contributing to ergy services in West Africa, through a regional programme to improve energy efficiency. The project aims to overcome the technical, financial, legal, institutional, er and capacity related barriers that hinder the implementation of cost effective energy efficiency (EE) measures and systems.

ocuses on the special interests and realities of poor women and men in urban and rural areas. Based within the ECOWAS Centre for Renewable Energy and ency (ECREEE), SEEA-WA seeks to combine improved energy efficiency with ongoing work on renewable energy sources, in order to broaden energy access.

BJECTIVES

bjective of SEEA-WA is to improve framework conditions for access to energy services, by supporting the creation of a regional programme on governance, related iciency and access.

objective is to:

l the Development of policies and regulatory frameworks necessary for the adoption of energy efficiency measures;

ise the awareness of policy makers, regarding the commercial actors in the key energy value chains.

ild capacity at the regional and national level to facilitate implementation of the key energy efficient technologies.

A DESCRIPTION

ork conditions:

ms to support ECOWAS national authorities in creating a conducive regulatory and business environment to encourage women and men to adopt energy savings. members will aid in choosing among the wide variety of possible policy tools (standards and labelling, regulations, educational tools, fiscal and tariff tools, special financial tools, etc.) those that would be applicable and effective in the West African context.

areness:

y efficiency measures pay for themselves, through savings on energy bills. Capturing this potential for savings requires decisions by a myriad of individuals, s and businesses. The awareness raising aspect of SEEA-WA will reach out, on the one hand, to the commercial actors of the key energy value chains – the stove charcoal producers, the electric appliance importers and sellers, the power utilities, the home builders – and on the other hand, to the women and men who use make the decisions on purchasing (or producing themselves) the major energy using devices.

EA-WA Project Technical Implementation Strategy: Work with competence Centres in West Africa to build capacity at the regional and national level in the plementation of the key energy efficient technologies.
courage exchange of experience and the flow of information among energy practitioners in West Africa.
ganise focused training on the areas designated by national authorities, bringing in high level regional and international expertise.

ion on energy efficiency will benefit both the minority in West Africa who currently have access to modern energy but are faced with high prices and unreliable well as the majority, for whom gaining access to affordable modern energy depends on reducing costs so as to make access programmes economically viable.

tivities:

ergy Efficiency stock taking, diagnosis in ECOWAS countries.
gional level institutional capacity building, knowledge sharing.

tional level institutional capacity building, knowledge sharing, institutional change.
velopment of ECOWAS EE White Paper.
rmulating gender-sensitive energy efficiency policies and programmes.

and visual identity:

rry out national campaigns focused on key intermediaries.
rry out regional and national media campaign focused on general public.
gional and national capacity building on technical issues.
gional and national financial tools.

/A Actions

ns at the National Level

ntification of a national Competence Centre for Energy Efficiency
ck taking of the current EE situation in the countries
pporting the identification and development of concrete EE actions
rgeted Capacity Building

ns at the Regional Level

ergy Efficiency White Paper
velopment of policy tools (e.g. labels and standards)
tablishment of a network (Exchange of information, best practice and lessons learned)
gional trainings on specific issues

OLICY (EEEP) AND TARGETS

S Center for Renewable Energy and Energy Efficiency (ECREEE), under the SEEA-WA project elaborated the ECOWAS Energy Efficiency Policy and set regional nergy efficiency measures in ECOWAS Member States. This policy has been adopted by the Heads of Government and authority of the ECOWAS Member States.

AS Energy Efficiency Policy seeks to contribute to creating a favourable environment for private investments in energy efficiency, and spurring industrial and employment through reduction of energy bills. Energy efficiency is considered as an integral part of the modernisation and greening of West African The policy aims to implement measures that free 2000 MW of power generation capacity and in the long term, more than double the annual improvement in energy o as to attain levels comparable to those of world leaders. In effect, the amount of energy needed to produce a certain amount of goods and services would about 4% annually.

targets of the regional energy efficiency policy are:

- Phase out inefficient incandescent lamps by 2020;
- Reduce average losses in electricity distribution from the current levels of 15 - 40% to the world standard levels of below 10%, by 2020;
- Achieve universal access to safe, clean, affordable, efficient and sustainable cooking for the entire population of ECOWAS, by 2030;
- Adopt region-wide standards and labels for major energy equipment by end of 2014;
- Develop and adopt region-wide efficiency standards for buildings (e.g. building codes);
- Create instruments for financing sustainable energy, including carbon finance, by the end of 2013, and in the longer term, establish a regional fund for the development and implementation of sustainable energy projects.

icy Answer

option of the White Paper on Access to Energy in 2006

eation of ECREEE in 2007: ECOWAS Centre for Renewable Energy and Energy Efficiency

e SEEA-WA project - financed by the ACP-EU Energy Facility, UNDP, ADEME - supported the development of a regional Energy Efficiency Policy. Approved in 12 by the region's Heads of State.

icy Targets

at was initiated at the first meeting of the Regional Multisector Group (Bamako, May 2005) led to the adoption by ECOWAS-UEMOA Heads of State (Niamey, 6) of a strategy for improved access to energy services: the "White Paper for a Regional Policy For Increasing Access to Energy Services For Populations in Rural an Areas in Order to Achieve the Millennium Development Goals". The White Paper contains the following ambitious numerical targets for access to modern to mechanical power for productive activities, and to electricity:

0% access to a modern cooking fuel;
% access in rural areas to productive energy services in villages, in particular mechanical power to boost the productivity of economic activities;
% access to an individual electricity supply;
% of the rural population will live in localities with:
dernised basic social services - healthcare, drinking water, communications, lighting, etc;
cess to lighting, audiovisual and telecommunications service, etc.;
e coverage of isolated populations with decentralised approaches.

WAS PROGRAMME ON GENDER MAINSTREAMING IN ENERGY ACCESS (ECOW-GEN)

e ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) launched a flagship programme entitled ECOWAS Programme on Gender ng in Energy Access (ECOW-GEN). The programme was established against the background that women's potential, in the ECOWAS region, as producers and energy services is under-utilized and that empowering women to make significant contributions in the implementation of the adopted regional renewable energy and ency policies is necessary for the achievement of the Sustainable Energy for All (SE4ALL) goals in West Africa. Moreover, the programme is founded upon the the ECOWAS Gender Policy which emphasizes the "need to develop policies and programmes to provide alternative energy sources which would contribute to lth and also alleviate their time burden".

the development of women-led business initiatives in the energy sector, ECREEE, through the support of the Spanish Agency for International Cooperation and t (AECID), established the ECOWAS Women's Business Fund. ECREEE will work with Member States to identify and support, through the fund, innovative energy emented by women groups and associations. In addition to this, ECREEE will assist Member States to establish similar funds in their respective

WAS SOLAR THERMAL PROGRAM

goal of the Solar Thermal Program (SOLTRAIN) in West Africa is to contribute to the switch from a fossil fuel based energy supply to a sustainable energy supply d on renewable energies in general but based on solar thermal in particular. The overall project will be coordinated by ECREEE and technically implemented by in cooperation with 8 institutional project partners from 7 West African countries (Cape Verde, Nigeria, Burkina Faso, Ghana, Mali, Senegal, Niger and Sierra

AS solar thermal capacity building and demonstration program therefore aims to remove existing awareness, political, technological, and capacity related barriers t solar thermal energy deployment in ECOWAS countries. The program will also contribute to increase the grid stability and save national power reserves as solar ems will significantly reduce the stress on electric grids due to the shift from electricity to solar energy. The program links precisely to the goals of the regional enewable energy and energy Efficiency adopted by the ECOWAS Authority of Heads of State and Government in 2013. The regional policies considered solar least cost sustainable energy technology and set specific targets for its use to meet sanitary and industrial hot water needs in the region.

SOLtrain West Africa are:

pacity Building by theoretical and practical Train-the-trainer courses to selected universities and polytechnic schools in the area of solar water heating and solar rmal drying

ntify, monitor, analyze and improve existing solar thermal systems together with the partner institutions (practical training).

chnical support of local producers.

sign and Install solar thermal systems on the partner institutions for teaching and demonstration purposes.

e partner institutions will offer trainings to national companies, installers, producers and further training institutions within their countries.

tallation of 200 Demonstration systems at social institutions as schools and hospitals engineered by the partner institutions and installed by national practitioners

ainings to administrative, political and financial stakeholders in each country

lar thermal testing facility in one of the countries

will run from 2015 until 2018 and will strengthen the capacity of national actors and of existing partner institutions dealing with solar thermal energy such as schools and universities in all 15 ECOWAS Member States.

CTS FOR THE FUTURE

o achieve these policy targets, specific initiatives have been put in place in order to define the future prospects and the way forward for EE in the region. The step-ementation of these initiatives is described below.

EE initiatives

aborates specific programmes that have been earmarked to achieve the ECOWAS EE. These programmes are classed into (6) priority initiatives namely:

andards and labeling
icient Lighting,
gh performance of Distribution of Electricity,
ergy Efficiency in Buildings,
fe, Sustainable and Clean Cooking,
ancing Sustainable Energy.

RDS AND LABELING

mponents of the ECOWAS energy efficiency Standards and Labeling initiative are as follows:

gional cooperation on the development and implementation of ECOWAS regional standards and labels for energy using equipment (lighting, refrigerators, air nditioners, motors, cooking etc.) and coordination with international standards development, for example with clean cookstoves;
gional cooperation on the development and implementation of legislative, regulatory and other energy efficiency policies and tools such as product efficiency rating stems, the definition of multiple tiers of product performance and standardized testing and certification of equipment to verify performance and accuracy of labelling;
areness raising for national authorities, manufacturers and the general public
pacity building of main stakeholders and training and qualification of staff
velopment and implementation of financial instruments to support the implementation of ECOWAS standards and labels. This refers both to securing funding for velopment and implementation of the S&L initiative and to the introduction of financial incentives to promote the adoption of efficient energy using equipment by d-users.

ions on standards and labeling at regional and national levels

ctivities to be conducted in the framework of the ECOWAS energy efficiency standards and labelling initiative are listed as preparatory phase, design and phase and implementation phase. This document will detail the implementation phase actions to enhance development of the various National Energy Efficiency .

Annex 1a for standards and labeling implementation phase actions **)

T LIGHTING

ffective and self-sustaining transition to efficient lighting in all ECOWAS countries, a cohesive set of national and regional actions regarding on-grid and off-grid been designed for implementation in these countries. These actions cover the four parts of the integrated policy approach:

nimum Energy Performance Standards (MEPS);
pporting Policies and Mechanisms (SPM);
nitoring, Verification and Enforcement (MVE); and
vironmentally Sound Management (ESM).

nd depth of these actions will vary from country to country depending on whether the country has: i) many or intensive MEPS/SPM/MVE/ESM activities underway or) some MEPS/SPM/MVE/ESM activities underway or planned; or iii) no MEPS/SPM/MVE/ESM activities.

neet the objectives of this Strategy, it is intended that energy efficiency interventions will be implemented through a phased approach. The timing of the three follows:

ase 1: July 2014 to December 2015;
ase 2: January 2016 to December 2016;
ase 3: January 2017 to December 2020

vities under the four thematic areas of the Strategy are summarized as follows:

n Energy Performance Standards – Key Activities

nduct national consultations with policy makers and other stakeholders on the Harmonised MEPS of on-grid and off-grid efficient lamps
rsue the process of the ECOWAS Standards Harmonisation Model (ECOSHAM) to adopt and publish ECOWAS Harmonised MEPS of on-grid and off-grid efficient mps
opt ECOWAS Harmonised MEPS of on-grid and off-grid efficient lamps (by each ECOWAS Member Country) and publish in national official journal.

keholder consultations, the Thematic Working Group on Minimum Energy Performance Standards developed Minimum Energy Performance Standards for Mains-neral Lighting Service Lamps and Minimum Energy Performance Standard for Off-Grid Lighting Products. The key requirements under the Minimum Energy Standards for Mains-Voltage General Lighting Service Lamps include:

y – lamps must have a minimal efficacy, measured in lumens per watt (lm/W) of the following:

Rated Lamp Wattage LP (W)	Minimum Efficacy (lm/W)
LP<5	40
5 ≤ LP < 9	45
9 ≤ LP < 15	50
15 ≤ LP < 25	55
LP ≥ 25	60

mp Lifetime – lamps shall have a rated lamp lifetime of 6000 hours or more, as measured according to the appropriate IEC test standard.
wer Fluctuation Tolerance – lamps shall be able to operate within a voltage range of 160-260V.
wer Factor – lamps shall have a power factor that is no less than the values shown

Rated Lamp Wattage	Minimum Power Factor
<25W	≥ 0,50
≥25W	≥ 0,90

ht Quality – lamps shall achieve a colour rendering index (Ra) of 0.80 or higher.
mp Mercury Content – lamps shall contain no more than 2.5 mg of mercury.

uirements under the Minimum Energy Performance Standard for Off-Grid Lighting Products include:

men Maintenance –the light output of the product shall be ≥ 85% of specified light output at 2,000 hours AND ≥ 95% of specified light output at 1,000 urs(depreciated at highest setting) (draft)
rability and Quality – the off-grid lighting product must comply with the following quality standards:
arger – any included AC-DC charger must carry approval from an accredited consumer electronics safety regulator.
ttery – must be protected by an appropriate charge controller that prolongs battery life and protects the safety of the user. No battery may contain cadmium or rcury at levels greater than trace amounts.
ater Protection

- Portable Separate Systems: IP x1
- Portable Integrated System: IP x3
- Fixed (outdoors) Integrated System – permanent outdoor exposure: IP x3
- All PV Modules - permanent outdoor exposure: IP x3 AND circuit protection

ghtness – At least one lighting level, which defines the "specified light output" in subsequent testing, must meet one of the following criteria:
ht Output must be greater than 25 lumens or greater than 50 lux over an area of 0.1 m2 under test conditions described in IEC TS 62257-9-5.

ing Policies and Measures – Key Activities

orm consumers, policy makers and other stakeholders of the advantages of efficient lighting products over the traditional lighting products – on radio, television, at blic fora organized in various public places such as lorry stations, sponsored events at community centres, under the sponsorship of the traditional leaders (chiefs, ers and opinion leaders)
stribute free on-grid and off-grid efficient lighting products or at subsidised cost to carefully selected communities (with retrieval and destruction of replaced andescent lamps)
plement of social housing projects fully equipped with efficient lighting
plement financing schemes to cover the upfront cost of efficient lighting products (e.g., on-bill financing)
plement harmonised mandatory labelling and certification for on-grid and off-grid efficient lamps in all ECOWAS countries

ing, Verification and Enforcement – Key Activities

tablish National Registries for on-grid and off-grid lighting products
nitor efficient on-grid and off-grid lighting products at ports and markets of ECOWAS countries
tablish a Regional Test Laboratory for on-grid and off-grid efficient lighting; ensure this laboratory has international accreditation
tablish National Test Laboratories for on-grid and off-grid efficient lighting or strengthen selected existing national laboratories; ensure this laboratory has ernational accreditation
ke importers, wholesalers and distributors of efficient lamps and their customers aware of penalties for non-compliance of standards and labelling requirements

mentally Sound Management – Key Activities

eate public awareness of the environmentally sound disposal of on-grid and off-grid efficient lamps and batteries
velop and adopt national regulation for environmentally sound disposal of spent on-grid and off-grid efficient lamps and batteries
velop and implement national collection systems established for spent on-grid and off-grid efficient lamps and batteries
velop and establish commercially viable recycling and disposal facility for spent on-grid and off-grid efficient lamps and batteries

EFFICIENCY IN BUILDINGS

Efficiency in buildings has a policy and regulation prepared on the ECOWAS Directive on Energy Efficiency in buildings and submitted at the ECOWAS Energy eting for approval.

Activities of national interest

es that could be incorporated into different national actions include:

ntifying and analysing the real energy data consumption of buildings in ECOWAS countries in order to propose reference values on energy consumption, and also epare regional standards and labelling for energy performance of buildings;
ecifying the contents of existing building codes and legislations on energy efficiency in buildings in the 15 ECOWAS;

dividual countries to revise or develop building codes and legislations on energy efficiency in buildings in order to transpose the regional directive into National lding codes;
rrying out pilot projects of energy performance construction in countries (for example construction of bioclimatic schools showing experiences and local materials

l training programmes on EE in Buildings

ain the trainer on thermal calculations tools and energy performance of buildings.
ain the trainer for best building /construction practice and for energy audits in buildings

ERFORMANCE OF DISTRIBUTION OF ELECTRICITY

stribution systems are by nature local. It is however worth noting that, in some countries, cross border distribution can be advantageous. This means that the opted must be implemented by a local distribution company with the aid and cooperation of national authorities and international partners. While the actions to be re local, WAPP and ECREEE can provide regional support to facilitate national action. The "Alliance for High Performance Distribution of Electricity" which brings activities of ECREEE and WAPP aims to provide this support through the following actions:

cilitating sharing of experience and best practices among West African distribution companies.
rrying out regional capacity building programmes.
cilitating the sharing of human and technical resources among West African distribution companies.
eating a data base, through cooperation between WAPP and the ECREEE Energy Observatory, on the state of the electricity sector in the ECOWAS countries, luding production, losses, tariffs, etc.
eating awareness among national political leaders on the issues, opportunities and obstacles to improving power distribution, through high level political events at regional level.
eating a large West African market in high performance distribution equipment, so as to lower costs, through regional standards for equipment.
stering regional production of high performance distribution equipment, to feed a regional market.
pporting the creation of a West African research network for power distribution, adapted to West African conditions.
cilitating financing of national upgrading programmes, through regional meetings with development and finance partners.

USTAINABLE AND CLEAN COOKING

and regulatory framework

nd regulatory framework on clean cooking calls for the development and adoption of national cooking policies, strategies and targets, including legal and regulatory in line with the existing ECOWAS regional policies and the SE4ALL initiative. It aims to reach market transformation towards modern and alternative fuels and ces to reduce health and environmental impacts of traditional fuel use on the people.

al initiatives to support national actions

initiatives target the development of a national action plans for clean, safe, efficient and affordable cooking energy solutions including an assessment of the current mework conditions/barriers, cooking habits, market for clean cook stoves, producers etc.), as well as targets and strategies to reach these targets.

tion plan could be developed around the following intervention logic:

hancing demand
engthening supply
stering an enabling environment
pport the promotion of market-based solutions (including the private sector, NGOs, community-based organisations and microfinance organizations) and the nancement of market mechanisms.
pport the build-up of participatory, integrated institutional approaches, where communities play a key role. Community-based strategies can be helpful along the ole value chain from community-managed forests through modern supply channels and more efficient end-user equipment

le measures to develop LPG programmes include, among others:

dernizing regulatory frameworks
rmally adopting of international quality and safety standards
proving roads and port infrastructure and reducing port congestion
mmunicating information widely to the public in nontechnical language, specifically, address perception of high risk of LPG use for cooking in households
cilitating operator training
nitoring to discourage commercial malpractice as well as raise public awareness
er incentives to encourage private LPG retail/service companies to build up distribution network and retail outlets
veloping financial schemes such that LPG marketers can offer micro-finance schemes, and can lower barriers to LPG selection by making it easier to finance inder deposit fees and stove purchases

objectives of the safe and sustainable cooking initiatives include:

a self-sustaining entrepreneurial network of rural micro-enterprises for delivery of improved biomass fuels. Measures to achieve this objective could be, rs:

nducting training courses for new entrepreneurs wherever required
nducting refresher courses for successful entrepreneurs

n and marketing activities, e.g. village level awareness camps and programmes organised to create marketing opportunities for the new enterprises

suring quality of the products through continuous monitoring and evaluation
couraging local banks and financing institutes to support the new businesses

ing the use of improved biomass fuels as a common practice for rural households by:

engthening and expanding PSFM in production forest areas: support the development of strategic partnerships and collaborative arrangements with national titutions and Non-Profit Associations, regional and international agencies.
suring community engagement in PSFM and village livelihood development
ot forest landscape management: develop methodologies and frameworks for forest landscape management
abling a legal and regulatory environment (especially forest law) For example:
sessment of national REDD+ potential
velopment of a REDD+ Strategy, including assessments such as: forest conservation and use, agriculture, energy, livelihoods, rural economy, biodiversity & osystem services, development issues etc.
velopment of criteria & guidelines for the development of REDD+ pilot projects
dertake assessment of environmental and social issues and risks: identify major potential synergies or inconsistencies of country sector strategies in the forest, riculture, transport, or other sectors with the envisioned REDD+ strategy

a monitoring system for the fuel wood value chain in order to prevent uncontrolled deforestation and guarantee sustainable forest management.

olve women in the conceptualization, development and implementation of energy policies, projects and programmes as much as possible
oduce promotional messages to address the gender issue and attempt to form partnerships with women's groups (or NGOs in the area)
velop programmes to train young women to produce, operate and maintain equipment on their own
velop and implement gender-responsive national policies and programmes on clean and efficient cooking
onomic empowerment of women through their increased involvement in the cooking energy value chains
pacity building of policy makers and practitioners to integrate gender in their cooking energy policies and programmes
egration of gender indicators in all baseline studies
nduct gender analysis of business models to evaluate economic implications for women in the value chain as well as social benefits and barriers for women related different production modes
velopment of practical guidelines for mapping gender in the cooking energy value chains

nder integration in marketing and awareness raising messages at regional level to ensure that women and men are targeted and to ensure the content is gender nsitive

ST AFRICAN CLEAN COOKING ALLIANCE-WACCA

AS Centre for Renewable Energy and Energy Efficiency (ECREEE) initiated a regional Cooking Energy initiative called West African Clean Cooking Alliance was officially launched during the ECOWAS High Level Energy Meeting in Accra, Ghana, on 30 October 2012. The overall objective of the initiative is to provide ean, safe, efficient and affordable cooking energy in the entire ECOWAS region. The principal goal of the initiative is to improve living conditions (economic, social of the population of ECOWAS countries through an increased access to cleaner and more efficient cooking fuels and devices, sustainable biomass and modern reducing local (deforestation) and global (greenhouse gases emissions) environmental impacts. The WACCA objectives are in line with the overall objective of promote energy access, renewable energy and energy efficiency within the ECOWAS region and thus by 2020, 60% of the population and by 2030, the entire opulation shall have access to clean, safe, efficient and affordable cooking energy.

evel, WACCA is set to build upon existing interventions on the various fuels and technologies, accumulate and share knowledge on the available existing and technical approaches. WACCA will facilitate the adoption of standards for cooking technologies in accordance with international agreements as developed lobal Alliance for Clean Cookstoves (GACC) and through that, enhance and complement activities implemented in the framework of the ECOWAS Regional on Sustainable Energy for All (SE4ALL) through the use of Renewable Energy (promotion of alternatives of Fuelwood) and Energy Efficiency (ECOWAS Initiative s and Labeling). The capacities for research and policy development on guidelines for the value chain of cooking fuels (wood, charcoal, LPG, bio-ethanol, etc.) will ned and a consistent system for monitoring and evaluation in accordance with other monitoring and evaluation systems will be developed at regional level.

evel, WACCA will assist in mapping the existing initiatives on fuel and cooking equipment and updating national strategies for cooking energy. Through the f solutions and bottlenecks, the initiative will enable the development of approaches for the local production of equipment and fuels and market development for and fuels. Key elements of the initiative will be development of clean cooking strategies, capacity development, and implementation of awareness campaigns and nt of financing mechanisms.

d organisations working together with ECREEE include:

C-Energia,
obal Alliance for Clean Cookstoves (GACC)
strian Energy Agency (AEA)
ERES,
Z and
EED

1a: Standards and labeling Implementation phase actions

Description	Priority	Resource Needs
Implementation of core activities		
Conduct training and informational workshops to educate and build capacity among stakeholders. For instance: - Training workshops to build capacity on standards and labelling in the national standards bodies and energy authorities - Training workshops in certification procedures, compliance monitoring, and enforcement programs. - Training of importers, retailers and other relevant stakeholders such that they actively support the initiative.	H	H

Initiate the Institutional Development Plan.	H	H
Initiate the Monitoring, Verification, and Enforcement Plan.	H	M
Initiate the Monitoring & Evaluation Plan	H	M
Initiate the Communications Plan and launch awareness campaigns	H	H
Product Policy Implementation		
Assess international product definitions, test protocols, rating schemes, performance level definitions, certification procedures, technical analyses, and data sources for use as a baseline in development of S&L policy for the selected product category	H	L
Collect additional market data and baseline usage and performance data for the selected product category, as necessary to inform a decision on efficiency performance levels, for instance through field surveys (e.g. end-use metering studies) and laboratory testing	H	H
Development of minimum energy performance standards (MEPS) for selected products on the basis of market analysis and international benchmarking	H	M
Organise a series of in-person stakeholder meetings for the selected product category to discuss proposed efficiency requirements, collect feedback, and encourage institutional buy-in.	H	L
Adopt or develop a test method for evaluating energy performance of the selected product. Take steps to harmonise with international test methods, to the extent that such standards are available, applicable for use in the region, and can help to expedite the policy development process	H	L
Finalize requirements for certification and regional recognition of qualified products	H	L
Implementation of complementary activities		
Development of supporting government activities to increase the effectiveness of energy efficiency standards and labels, such as government promotion of the programme, inclusion into government procurement policy and publication of lists of current models on the market	M	L
Financing of implementation of the S&L initiative		
Explore options for technical assistance and develop proposals for potential donors in order to secure funding for implementation of the S&L	H	L

gh, M=Medium, L=Low