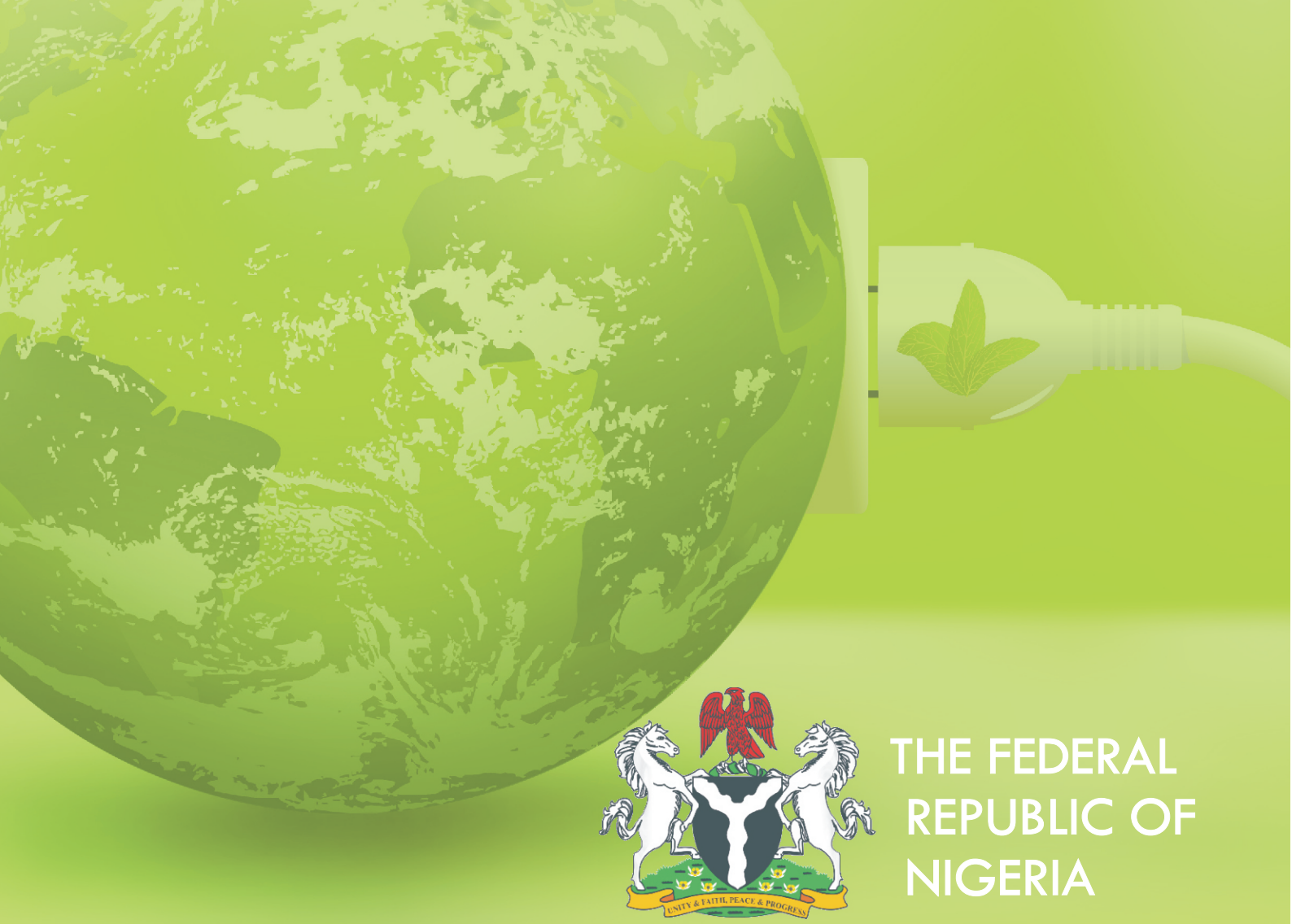

THE FEDERAL REPUBLIC OF NIGERIA

NATIONAL ENERGY EFFICIENCY ACTION PLANS (NEEAP) (2015 – 2030)

ADOPTED BY THE

INTER-MINISTERIAL COMMITTEE ON RENEWABLE ENERGY AND ENERGY EFFICIENCY (ICREEE)

APPROVED BY THE

NATIONAL COUNCIL ON POWER (NACOP)

July 14, 2016

FIRST VERSION

1. ACKNOWLEDGMENTS

The National Energy Efficiency Action Plan (NEEAP) for Nigeria has been developed through concerted efforts of over twenty Ministries, Departments and Agencies of the Federal Government of Nigeria, with inputs from representatives of 36 states and the FCT as well as the Private Sector, NGOs, Civil Society, Academia and Development Partners in Nigeria. The work was prepared with the support of ECOWAS Centre Renewable Energy and Energy Efficiency (ECREEE) additional support was received from SE4All Africa Hub-AfdB, GIZ-NESP, UNDP and several other Development Partners.

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2. FOREWORD

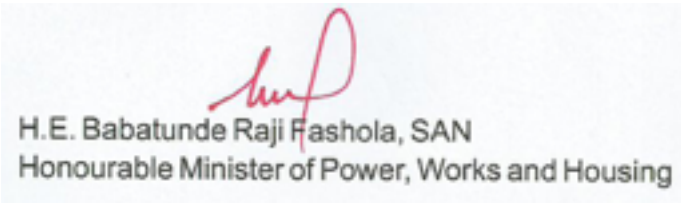
Adequate energy supply is generally considered the backbone for the sustainable development of any country. As a result, the UN Secretary General's Sustainable Energy for All (SE4AII) Initiative launched in 2011 and the declaration of the current decade towards achieving universal energy access, has received worldwide attention. In response to these calls the ECOWAS member states have adopted the templates to formulate and implement National Energy Action Plans within the framework of the SE4AII. The need for National Energy Efficiency Action Plans (NEEAP) and National Renewable Energy Action Plan (NREAP) has become imperative as the world recently has passed 400 parts per million of atmospheric CO2—potentially enough to trigger a warming of 2 degrees Celsius compared with pre-industrial levels.

Aware of this situation, the Federal Government of Nigeria, through the coordination of the Federal Ministry of Power, Work and Housing in collaboration with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE), and with the support of its development partners, has developed the current actions plans towards achieving SE4ALL goals through the gathering of available data, exchanges and suggestion with the various relevant actors in both the public and private sector.

The Nigerian National Energy Efficiency Action Plan (NEEAP) has been developed with the contribution of several Nigerian stakeholders. It demonstrates FGN's commitment to matching her words with action as the National Renewable Energy & Energy Efficiency Policy (NREEEP) approved in May 2015 directs the Hon. Minister of Power to develop the NEEAP within 6—12 months of the approval of NREEEP, 2015.

On behalf of the Federal Government of Nigeria, I would sincerely like to thank all those who have contributed to the successful production of the actions within the framework of a sustainable energy for all. These include the Inter-ministerial Committee on Renewable Energy and Energy Efficiency, (ICREEE), relevant Ministries and Agencies, private institutions in the industrial sector.

The NEEAP provides useful information on the energy efficiency potential and market in Nigeria, the relevant policies and barriers to overcome, and I trust that this NEEAP will be a useful tool for the development, implementation and promotion of energy efficiency measures.



H.E. Babatunde Raji Fashola, SAN
Honourable Minister of Power, Works and Housing

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INTRODUCTION

The template used for this work was initially designed by the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) and adopted by the 15 ECOWAS members-states. This National Energy Efficiency Action Plan (NEEAP) includes baseline data and information on energy efficiency activities and programmes in Nigeria, barriers to the development and promotion of energy efficiency in the country and suggested achievable energy efficiency targets, incl. gender disaggregated indicators, based on national potentials and socio-economic assessments. An overview on concrete policy and regulations, laws, incentives and measures, to be implemented by the country to achieve the targets are also included.

The implementation of the NEEAP will be monitored by the Federal Ministry of Power, Works, and Housing.

The NEEAP development process has been supported by a broad range of partners such as the GEF Strategic Programme for West Africa, the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the Governments of Austria and Spain.

SUMMARY OF THE NATIONAL ENERGY EFFICIENCY POLICY

Discussion on energy efficiency in Nigeria has just started receiving significant attention, an energy study conducted by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme (NESP) observed that with exception of the NESP and UNDP/ECN programme currently undertaken in the country, measures in the sense of centrally planned or coordinated programmes are not yet in place. However, the National Energy Policy (NEP) 2013 a revised version of NEP 2003 recognises that energy utilization in all sectors of the economy is far from efficient. Apart from direct losses, using energy inefficiently has three major implications to the national economy, namely, investments in energy supply infrastructure in excess of what is required with more efficient equipment and practices; increased environmental problems; and increased cost of goods. The revised version of the NEP (2013) therefore states that it is necessary to emphasize the effective and efficient use of energy and proposes major areas to be considered for energy efficiency and conservation: residential sector, industry, transportation, services/commercial sector, agriculture, and energy efficient building designs. Key strategies of moving the energy efficiency sub-sector forward are highlighted below.

Strategies of the NEP 2013

Short-Term

a) Strengthening existing institutional and legal framework for the promotion of energy efficiency and conservation
b) Strengthening national, regional and international collaboration on energy efficiency and conservation
c) Adopting appropriate policy instrument-building standards/codes, mandatory labelling, mandatory energy audits, energy use disclosure, soft loans, tax credits, investment subsidies, etc.
d) Conducting comprehensive energy end-use analysis in various sectors of the economy
e) Introducing energy audits in key sectors of the nation's economy
f) Promoting education, information and public awareness campaigns on energy efficiency and conservation best practices

g) Promoting the establishment of Energy Services Companies (ESCOs)

h) Launching a national Demand-Side Management (DSM) initiative

i) Providing economic, fiscal and financial incentives to promote energy efficiency in all sectors of the economy

j) Promoting research, development and adaptation of internationally available energy-efficient technologies and measures

k) Introducing energy efficiency awards in all sectors of the economy

l) Increasing share of green electricity by 1% every year on Year-To-Date (YTB) basis compared to 2012 level

m) Setting and enforcing targets about energy efficiency and conservation

n) Establishing necessary guidelines and regulation on energy efficiency, conservation, consumption, technology, fuel mix, information gathering, etc.

o) Medium-Term

p) Reviewing, improving and continuation of short-term strategies

q) Ensuring reduction of electricity generation, transmission and distribution losses from the current level of 15-40% to less than 10% by 2020

r) Establishing an appropriate energy efficiency regulatory and legislative framework

s) Establishing guidelines for energy efficiency best practices in all sectors of the nation's economy

t) Designing and implementing Minimum Energy Performance Standards (MEPS) for equipment and appliances

u) Designing and implementing appropriate mandatory labelling for all energy consuming appliances

v) Ensuring the certification and accreditation of energy auditors and energy efficiency practitioners

w) Integrating energy efficiency and conservation studies into curricula of educational institutions in Nigeria

aa) Long-Term

bb) Reviewing, improving and continuation of medium-term strategies

cc) Replacing all incandescent light bulbs in every home, industry, institution and establishment in Nigeria with LEDs and other energy saving lamps by the year 2025

dd) Achieving by 2025, the establishment of a broad range of equipment energy efficiency standards and labelling by 2025

ee) Reducing by 2025 energy-related greenhouse gas emissions by 15% compared to the level of 2013

ff) Furthermore, the Federal Executive Council of Nigeria in May 2015 also approved the National Renewable Energy and Energy Efficiency Policy. Key objectives of the policy include:

gg) To ensure the prudent exploitation of the nation's energy resources.

hh) To enhance energy security and self-reliance.

ii) To reduce the production cost of energy-dependent goods and services.

jj) To reduce adverse impacts of energy utilization on the environment.

kk) To eliminate avoidable investments in energy supply infrastructure.

Arising from the approval of the NREEEP 2015 and current efforts from development partners e.g. (GIZ, UNDP GEF, etc.) and relevant Ministries, Departments, and Agencies (MDAs) some planned programmes of the Federal Government of Nigeria to boost energy efficiency in the country include the following:

- **Energy Efficient Housing Scheme:** This scheme is a partnership between the Federal Ministry of Environment and Aso Savings and Loans Plc, a leading mortgage bank, Kaduna State Government, Aso savings and Loans Plc, (a leading Mortgage Bank) Green Carbon Afrique who are the lead Investors partnering with EMEL Group. The objective is to deliver affordable energy efficient housing for staff of the Ministry by way of a flagship in order to foster growth. Some 40% of the energy efficient units are pre-fabricated homes and the housing scheme is designed to incorporate micro generation of electricity from renewable sources, mainly solar and biomass (the waste produced within the estate). The models of energy efficient electrical components ensure that residents of the new estate benefit from lower electricity bills. The Energy Efficient Housing project as launched in Kaduna will initially focus on 2,000 housing units and many more are in the pipeline from different states across the nation.
- **The Abuja Green City:** The Abuja Green City is an initiative of the Renewable Energy Programme of the Federal Ministry of Environment, together with Green Carbon Afrique Creation Environmental Services and Integra Integrated Renewable Energy Services. The low-carbon development is using a combination of local electricity generation, improved insulation, and energy efficient devices for the apartments.
- **Abuja Centenary City:** Being planned by an investor from the Gulf and designed by Julius Berger International, this city will feature an array of sustainable measures, renewable energy sources, energy-efficient mechanisms.
- **The Nigerian Clean Energy Access Program - NCEAP:** In line with the quest to reduce the global impact of climate change and as part of the solution to the epileptic power supply in Nigeria through the Nigerian Clean Energy Access Program, NCEAP plans to distribute 150 million bulbs over the next five years under the Clean Development Mechanism (CDM). This is part of Federal Ministry of Environment's initiative to ensure energy efficiency is private sector driven.

SUMMARY OF TARGETS

1.1 Targets for Energy Efficient Lighting

Table 1: Energy Efficiency lighting

	2010	2020	2030
Penetration rate of on-grid, energy efficient light (%)	NA	NA	NA
Penetration rate of off-grid, energy efficient lights (%)	NA	NA	NA
Percentage of public street lights that are high efficiency (%)	NA	NA	NA

1.2 Targets for High Performance Distribution of Electricity

Table 2: Target for High Performance distribution

	2010	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).	**NA**	**NA**	**NA**
Transmission losses (%)			
Total distribution losses (%)			
Technical losses (%)			
Non-technical losses (%)			

1.3 Targets for Energy Efficiency Standard and Label

Table 3: Energy Efficiency Targets for Standard and Label

	In force since 2010 (reference year)	By 2020	By 2030
Total Number of Energy Efficiency Standard in force in the country	**NA**	**NA**	**NA**
Number of Efficient lighting standards (on-grid / off-grid and Street lighting)	**NA**	**NA**	**NA**
Numbre of Appliances Standards in force (Refrigerators, Air conditiners, Washing machines, electric water heaters, fans, transformers, etc ,...)	NA	NA	NA
Total Number of Energy Efficiency Labels in force	NA	NA	NA
Numbre of Efficient lighting Labels (on-grid / off-grid and Street lighting)	NA	NA	NA
Numbre of Appliances Labels in force (Refrigerators, Air conditiners, Washing machines, electric water heaters, fans, transformers, etc ,...)	NA	NA	NA

1.4 Targets for Energy Efficiency in Buildings

Table 4: Energy Efficiency Targets for Buildings

	2010	2020	2030
Percentage of new large private buildings that implement energy efficient building designs and methods	**1%**	**6%**	**30%**
Percentage of new public buildings that implement energy efficient building designs and methods	Nil	10%	40%
Percentage of renovated private buildings that implement energy efficiency designs and methods	NA	NA	NA
Percentage of renovated public in buildings that implement energy efficiency designs and methods	NA	NA	NA

1.5 Target for Energy Efficiency in Industries

Table 5: Energy Efficiency Targets for Industries

	2010	2020	2030
Percentage of Industries that implement energy efficiency measures (%)	NA	NA	NA
Percentage of energy saving in industry (%)	NA	NA	NA

GENERAL INDICATORS

Table 6: General Indicators

	2010	2011	2012
Population Number	151.9	155.4	159.2
Population Growth rate (%)	2.7	2.6	2.6
Family size	6	6	6

Macro-economic indicaors

Table 7: Macro-economic indicaors

	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 ... 2011	year ... 2012	year 2013	year 2014
Primary energy intensity (Total Primary Energy Consumption/GDP)*	4,345.97	3,895.175	3,869.074	3,019.796	2,332.108	2,484.144	NA	NA	NA
Final energy intensity (Final Energy Consumption/GDP)*	NA	NA	NA	NA	NA	NA	NA	NA	NA
Final energy consumption per year (kWh/capita/year)	NA	NA	NA	NA	NA	NA	NA	NA	NA
Annual Electricity consumption (kWh/capita/year)[1]	14.46	17.71	15.85	15.85	19.21	19.21	18.14	NA	NA
Electricity intensity (final electricity consumption/GDP)	0.16	0.06	0.05	0.05	0.05	0.05	NA	NA	NA
Electricity consumption/household (kWh/per capita)1	111.146845	138.109692	126.454883	119.815149	135.397286	148.928463	NA	NA	NA
Electrification rate (%)	24	25	26	27	30	32	34	36	38

NATIONAL ENERGY EFFICIENCY TARGETS AND TRAJECTORIES

- **By 2020**
  - Efficient lighting will be used by 40% of the households
  - For high-energy consuming sectors (tr ansport, power and industrial sectors), efficient energy will increase by at least 20% compared to baseline
  - Achieve 10% biofuel blends
  - Improve the efficiency of the bioenergy sector
  - Distribution loss reduction target to 15-20%

- **By 2030**
  - Efficient lighting will be used by almost 100% of the households
  - For high-energy consuming sectors (transport, power and industrial sectors), efficient energy will increase by at least 50% compared to baseline
  - Curb the firewood demand below supply capacity
  - Distribution loss reduction target to less than 10%

[1] Please see http://www.indexmundi.com/g/g.aspx?c=ni&v=81 for further details

1.6 Efficient Lighting - Targets and estimated trajectories by 2020-2030

National 2020 and 2030 targets and estimated trajectories for lighting

Table 8: Efficient Lighting Targets and trajectories

	-	2013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Percentage of on-grid, energy efficient non- directional household lights sold per year **	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
• If available, estimate of electricity savings for on-grid household lighting (GWh/year) ***	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percentage of off-grid, energy efficient non-directional household lights sold per year **	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
• If available, estimate of kerosene savings for off-grid household lighting (million liters/year) ***	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percentage of public street lights that are high efficiency	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total number of high efficiency (CFL or LED) lighting devices sold or distributed during the year	2000	50,000	2m	5m	10m	12m	14m	16m	18m	20m	22m	24m	26m	28m	30m	32m	34m	36m
If pertinent, please describe any other national targets related to energy efficient lighting: please specify the target and the sector (households, commercial, etc.).	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1.7 High Performance Distribution of Electricity - Targets and estimated trajectories by 2020-2030

National 2020 and 2030 targets and estimated trajectory for losses in the electricity sector

Table 9: Performance Distribution of Electricity Targets and trajectories

	2010	2013*	2015	2016	2017	2018	2019	2020
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). (MWh)	22,863,600.00	22,863,600.00	67,904,892.00	83,292,140.53	102,166,139.57	125,316,986.80	153,713,816.01	188,545,366.71
Transmission losses	NA	NA	NA	NA	NA	NA	NA	NA
Total distribution losses**	NA	NA	NA	NA	NA	NA	NA	NA
Distribution technical losses	NA	NA	NA	NA	NA	NA	NA	NA
Distribution non-technical losses	NA	NA	NA	NA	NA	NA	NA	NA
Electricity savings (in GWh/year) ***	NA	NA	NA	NA	NA	NA	NA	NA

1.8 Energy Efficiency Standards and Labelling-Targets and estimated trajectories by 2020-2030

National 2020 and 2030 targets for energy efficiency labels

Table 10: Standards and Labels Targets and trajectories

	2010	2013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Number of Energy Efficiency Standard in force in the country	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Number of Efficient lighting standards (on-grid / off-grid and Street lighting)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Number of Domestic Appliances Standards in force (Refrigerators, Air conditiners, Washing machines, electric water heaters, fans, transformers, etc ,...)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Total Number of Energy Efficiency Labels in force	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Number of Efficient lighting Labels (on-grid / off-grid and Street lighting)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Number of Domestic Appliances Labels in force (Refrigerators, Air conditiners, Washing machines, electric water heaters, fans, transformers, etc .)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

1.9 Energy Efficiency in Buildings - Targets and estimated trajectories by 2020-2030

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

Table 11: Targets and trajectories for energy efficiency in buildings

	2013*	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Percentage of new large private buildings that implement energy efficient building designs and methods, according to the national building code.	1%	1%	2%	3%	3%	4%	6%	7%	9%	10%	12%	15%	18%	20%	25%	28%	30%
Percentage of new public buildings that implement energy efficient building designs and methods, according to the national building code.	Nil	Nil	3%	4%	4%	6%	8%	10%	12%	14%	16%	18%	22%	25%	30%	32%	35%	40%

1.10 Energy Efficiency in Industry - Targets and estimated trajectories by 2020-2030

Table 12: Energy Efficiency in Industry Targets and trajectories

	[illegible]	2013 *	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Number and type of Industries	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Energy saving potential (GWh)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percentage of Industries that implement energy efficiency measures (%)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Percentage of energy saving in industry (%)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

	National Public Institution	NATIONAL PUBLIC INSTITUTIONS INVOLVED IN NEEAP IMPLEMENTATION Responsibilities
1	National Environmental Standard Regulation Enforcement Agency (NESREA)	The principal thrust of this Agency is to set environmental standards and regulations that prevent or minimize pollution and encourage energy efficiency in all operations and ancillary activities of the **Power Sector** in achieving sustainable economic development in Nigeria. These Regulations shall cover power generation, transmission and distribution from the following (a) Combustion processes fuelled by gaseous, liquid and solid fossil fuels designed to deliver electrical or mechanical power, steam, heat, or any combination of these, regardless of the fuel type; (b) Renewable (hydro, wind, solar, geothermal) Sources; and (c) Nuclear Sources. This sector shall deploy energy efficient processes that are cost effective and meet the following requirements: (a) Provide greater energy security through the use of indigenous energy resources; (b) Encourage private investment in renewable energy and energy efficiency; (c) Reduce emissions of Greenhouse Gases (GHGs); (d) Address the associated problems of environmental degradation resulting from pollution, deforestation and vegetation loss; and (e) Ensure that energy sources are ecologically sustainable.

2	The Federal Ministry of Environment domesticating the United Nations Framework on Climate Change (UNFCCC)	(i) The Renewable Energy Programme is an initiative of the Federal Ministry of Environment in fulfilment of the Federal Republic of Nigeria's obligation to the United Nations Framework on Climate Change (UNFCCC) as part of Climate Change Mitigation Strategy; • To address the nation's challenges of moving towards clean, reliable, secure and competitive energy supply. • To develo p and implement strategies that will achieve clean, reliable energy supply and establish a mechanism to develop the sector based on international best practices to showcase viability for private sector participation and attract Green Funds. • Ensure alternative sources of energy that are clean, reliable, stable and sustainable. • Develop Policy objectives of sovereignty, national security and self - sufficiency. The long term objectives of the Renewable Energy Programme for Nigeria are to attract Foreign Direc t Investment (FDI) into the clean energy sector and ensure Nigeria develops sustainably with minimal ecological footprint. • (ii) The Department of Climate Change is the Designated National Authority with the obligation to domesticate the United Nations fra mework on Climate Change (UNFCCC). Major activity of the Department is the coordination of activities towards national implementation of the Climate Change Convention (UNFCCC) and the Kyoto Protocol. The Federal Ministry of Environment carries out these a ctivities through the Department by working in collaboration with other relevant government organizations, non - governmental organizations, academia and private sector. The Department's activities also include: • Annual national inventory of greenhouse gas em issions and assessment of mitigation options; • Assessment of the country's vulnerability and adaptation to the impacts of climate change; • Undertake studies and researches, through consultancies, in the science of climate change; Management of database for inventory, vulnerability and adaptation assessments; • Education and public awareness programme; Development of information sharing systems through establishment of a national climate charge website; • The Department serves as Designated National Authority (DNA) for implementation of Clean Development Mechanism (CDM).
3	Federal Ministry of Power	Responsible for formulating energy efficiency policies in the electricity sector
4	Federal Ministry of Lands, Housing, and Urban Development	Responsible for formulating energy efficiency policies in the Building sector
5	Standards Organisation of Nigeria	Responsible for developing and enforcing energy efficiency standards, labelling, and regulations
6	Federal Ministry of Industry, Trade and Investment (FMITI)	Responsible for supporting the development and implementation of ISO 50001 an EnMS in the industrial sector
7	Small and Medium Enterprises Development Agency of Nigeria (SMEDAN)	Responsible for monitoring and coordinating Medium and Small enterprises in Nigeria
8	National Association of Chambers of Commerce, Industry, Mines, and Agriculture (NACCIMA)	An umbrella organisation for all City/State and Bilateral Chambers of Commerce with the Federal Republic of Nigeria
9	Nigerian Customs Services	Responsible for cle arance and ensure products imported meet the required national standards

2 MEASURES FOR ACHIEVING THE TARGETS

2.1 Efficient lighting initiative

Please describe here the key measures undertaken as part of the efficient lighting initiative.These include actions in the four components of the lighting initiative, namely:

- Minimum Energy Performance Standards
- Supporting policies and measures
- Monitoring, Verification and Enforcement
- Environmentally sound management

2.1.1 Minimum Energy Performance Standards (MEPS)

Table 13: Goal attaining Measures

No	1
Measure (title)	**Adoption of Minimum Energy Performance Standards (MEPS) for lighting devices**
Type of measure*	*energy efficiency policy/tool, awareness raising/information*
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Planned
Time frame (start year –end year)	2015 to 2017
Description of the measure	Adopt and enforce the Minimum Energy Performance Standards by: • Conducting national consultations with policy makers and other stakeholders • Pursuing the ECOWAS Process of Standardisation (Ecosham) • Set up a national standards and labelling technical committee • Adopting ECOWAS Harmonised MEPS on efficient lighting and publish in national official journal • Phase out of inefficient lighting products
Target group **	*equipment manufacturers, retailers, end users,* *building designers* *facilities managers*
Implementing body/parties	GREEN Building Council Manufacturing Association of Nigeria (MAN) National Association of Cha mber of Commerce, Industry Mines and Agriculture (NACCIMA) Small and Medium Enterprises Development Agency of Nigeria (SMEDAN)
Sector	Residential and Industry sectors

2.1.2 Supporting policies and measures

No	2
Measure (title)	Energy efficiency policy and awareness raising campaign: CFL Phase-out Initiative
Type of measure*	
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Existing
Time frame (start year –end year)	2013- Ongoing
Description of the measure	Phase-out of Mercury based CFL Bulbs in Nigeria and introduce LED bulbs as alternative
Target group **	All sectors
Implementing body/parties	Federal Ministry of Environment
Sector ***	

No	3
Measure (title)	Rural Energy Access Project
Type of measure*	Awareness raising - Kerosene Lantern Exchange Initiative / 1 -KV Generator exchange (Residential) with Solar lighting Kits
Priority (1 to 5 from highest to lowest)	2
Existing or planned	Existing
Time frame (start year –end year)	2012- 2020
Description of the measure	Carbon emission reduction through clean energy migration/replacing kerosene lanterns with solar lighting kits
Target group **	Rural off-grid areas
Implementing body/parties	Federal Ministry of Environment
Sector ***	household, commercial sector

No	3
Measure (title)	Supporting energy efficient lighting policies and measures through awareness raising campaigns targeting final consumers
Type of measure*	awareness raising
Priority (1 to 5 from highest to lowest)	2
Existing or planned	Planned
Time frame (st art year –end year)	2015 to 2020
Description of the measure	Conduct public awareness campaigns + demonstration programmes on energy efficient lighting:

Description of the measure	Conduct public awareness campaigns + demonstration programmes on energy efficient lighting: • Inform consumers and other stakeholders of the social, economic and health advantages of efficient lighting • Distribute free (or subsidised) on-grid and off -grid lighting products to selected communities (with disposal of old lamps) • Develop social housing projects with efficient lighting
Target group **	*end users, planners, retailers, energy suppliers*
Implementing body/parties	Federal Ministry of Environment, Federal Ministry of Power, Works, and Housing
Sector	household, commercial sector

This could include: public awareness campaigns; mandatory labeling and certification; installation of efficient lighting in all new social housing projects; etc.

- Create 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.
- Demonstrate 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 through bulk procurement (e.g. through reducing import duties).
  - Promote installation of efficient lighting in all new social housing projects of national governments.
- Create 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.
- Develop 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.

- o 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.
- o Adopt reduced taxes (including import duties, VAT) for on-grid and off-grid efficient lighting products
- o Adopt incentive schemes (including tax holidays) to support local manufacture of on-grid and off-grid

2.1.3 Monitoring, Verification and Enforcement

Table 14: Monitoring Verification and Enforcement

No	4
Measure (title)	**Establish a system for Monitoring, Verification and Enforcement (MV&E) of Minimum Energy Performance Standards (MEPS) for lighting systems**
Type of measure*	Capacity building, monitoring and verification
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Planned
Time frame (start year –end year)	2015-2017
Description of the measure	• Establish National Registries for on-grid and off -grid lighting products • Create and make functional National Registries for lighting products. • Create and make functional a Regional Registry for lighting products • Collate data o n lighting products – country of origin, importers, quantity, quality, technical data sheets • Monitor import/export of efficient lighting products into Nigeria (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
Target group **	Nigerian Electricity Regulatory Commission (NERC)
Implementing body/parties	Federal Ministry of Power, Works, and Housing
Sector	Housing and Commercial Sector

2.1.4 Environmentally sound management

No	5
Measure (title)	**Environmentally sound management through the implementation of a collection and disposal system for energy efficient light bulbs**
Type of measure*	***Capacitybuilding, awareness raising/information.***
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year –end year)	2015 to 2030
Description of the measure	**Create public awareness of the environmentally sound collection and disposal of efficient lamps and batteries:** • Organize public education and awareness campaigns on the rationale behind and methods for environmentally sound collection and disp osal 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 • Organize special education programmes for the youth in schools **Conduct national consultations with policy makers and other stakeholders:** • Development of national regulation for environmentally sound disposal of spent efficient lamps and batteries • Application of Extended Producer Responsibility principle • 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:** • Conduct national consultations with utilities, selected shops, schools and other stakeholders on: ▪ 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 • Design national collection system for spent efficient lamps and batteries with ▪ Involvement of informal sector in spent lamps collection ▪ Incentives for consumers and spent lamp collectors • Adopt and implement national collection system for spent efficient lamps and batteries • Establish Collection and Recycling Service Organisations **Develop and implement national collection systems established for efficient lamps and batteries:** • 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. • Commission regional recycling and disposal facility(ies) for spent on-grid and off-grid efficient lamps and batteries
Target group **	*end users, public administration, equipment manufacturers, retailers,*
Implementing body/parties	Federal Ministry of Environm ent, Standard Organisation of Nigeria and Rural Electrification Agency
Sector	Household and Industry

2.2 Standards and labelling initiative

2.2.1 Policies and tools

Table 15 : Standards and labelling measures

No	1
Measure (title)	Nigerian Energy Support Programme (NESP) Baseline Assessment of Air Conditioners in Nigeria
Type of measure*	Tool
Priority (1 to 5 from highest to lowest)	2
Existing or planned	Completed
Time frame (start year –end year)	March 2015 to June 2015
Description of the Measure	a. Overview on the air conditioners' market in Nigeria; b. Identification of the main actors for Air Conditioners (production, sale, importation, main customers); c. Assessment of air conditioners' energy consumption and their rating performance (characteristics, classification, energy saving opportunities, etc.); d. Assessment of the role and importance of Standards, labelling, certification and testing facilities, as means to reduce energy consumption and, e. Identification of suitable intervention area s and approaches for the Nigeria Energy Support Programme to support quality standards and labelling for ACs in Nigeria.
Target group **	*public administration, equipment manufacturers, retailers, ACs suppliers*
Implementing body/parties	Standards Organisa tion of Nigeria, Nigerian Energy Support Programme, Federal Ministry of Power
Sector	Trade, Investment, and Power Sector
No	2
Measure (title)	Development and Introduction of Standards and Labels for Air Conditioners in Nigeria
Type of measure*	*Energy efficiency policy, standards*
Priority (1 to 5 from **highest** to lowest)	1

Existing or planned	Planned
	2015 - 2017
Description of the measure	SON to d evelop Minimum Energy Performance Standards and labels for air conditioners in Nigeria • Conduct national consultations with policy makers and other stakeholders • Develop EE Standards and MEPS for air conditioners • Harmonise standards and MEPS with the ECOWAS process of standardisation (Ecosham) • - Adopt and launch the MEPS, Standards and Labels in Nigeria • Publish in national official journal • Set up national technical and steering committees on standards and labelsin Nigeria Impact Assessment: • 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. Awareness creation: • Develop and introduce programs to encourage or require public -sector and large -scale private -sector proc urement of energy efficient products. • Formulate capacity development programmes for MEPS, Labels and standards for air conditioner • Organise stakeholders workshops
Target group **	*public administration, equipment manufacturers, retailers, energy suppliers*
Implementing body/parties	Standards Organisation of Nigeria (SON)
Sector	Trade and Investment

No	3
Measure (title)	NESP Development and Introduction Minimum Energy Performance Standards (MEPS) and Standards for Air Conditioner in Nigeria
Type of me asure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	In progress
Time frame (start year – end year)	March 2015 – September 2017
Description of the Measure	a) Introduction of S&L-ACN, for ACs in Nigeria based on the results of the Baseline assessment of ACs; Appraisal of Testing Facility: Appraisal of the need for an AC energy performance testing facility based on future market trends of already labelled imported ACs and locally manufactured AC sales in Nigeria – Preparation of a bankable business plan;
Target group **	Manufacturers of AC equipment, importers and exporters of ACs, public administration, MAN, NACCIMA, SMEDAN, CPC, NCO
Implementing body/parties	Standards Organisation of Nigeria (SON)

Sector	Trade and Investment
No	4
Measure (title)	Appraisal of Air Conditioners Testing Facilities in Nigeria
Type of measure*	tool
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	planned
Time frame (start year –end year)	March 2015 - August 2016
Description of the Measure	Appraisal of the need for an AC energy performance testing facility based on future market trends of already labelled imported ACs and locally manufactured AC sales in Nigeria – preparation of a bankable business plan
Target group **	*public administration, equipment manufacturers, retailers, ACs suppliers*
Implementing body/parties	Standards Organisation of Nigeria (SON), NESP, FMP WH
Sector	Industry, energy sector

2.2.2 Capacity building

No	5
Measure (title)	NIGERIAN ENERGY SUPPORT PRO GRAMME (NESP) Capacity Development and Awareness Creation for Standards and Labels for ACs in Nigeria
Type of measure*	Capacity Building
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	In progress
Time frame (start year –end year)	July 2015 – May 2017
Description of the Measure	a) Develop and conduct a training workshop on MEPS and energy labelling for supervision and enforcement personnel; b) Design and implement an awareness creation programme to ensure proper communication with the Ni gerian public, in particular with the main relevant actors of ACs (importers, exporters, local manufacturers) regarding the advantages of MEPS and labelling requirements for ACs. The objective is to ensure a smooth transition towards efficient AC market an d avoid reaction against MEPS and Energy Labelling for ACs; c) Develop adequate guidelines in form of leaflets/brochures to explain the benefits of MEPS and Energy Labelling to consumers; d) Develop and conduct a Train - the -Trainers workshop on the maintenance of air conditioners in Nigeria e) Establishment of a Stakeholder Discussion Forum. Such a continuous existing forum might be important to create ownership in the industry and the trading companies.
Target group **	Manufacturers of ACs, importers/exporters of A Cs, Consumers' Associations, Custom offices, FMITI, AC Manufacturer

Implementing body/parties	SON, MDAs, AC Manufactures, Consumers' Council of Nigeria
Sector	All Sector

No	6
Measure (title)	Building capacity among national standards bodies and other stakeholders
Type of measure*	*capacity Development*
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Scheduled for when?
Time frame (start year –end year)	2015 to 2020
Description of the measure	Capacity building: • Training and informa tional workshops to educate and build capacity among stakeholders:
	○ 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. • Strengthen and enhance national institutions. Institutions must have a mandate, an adequate budget, a well-trained staff, and sufficient resources to effectively oversee the development and implementation of the programmes. In this context, the cooperation between energy authorities and authorities in charge of standards shall be strengthened. • Develop capacity-building materials for S&L program managers and stakeholders.
Target group **	*public administration, equipment manufacturers, retailers*
Implementing body/parties	Public and Private institutions
Sector	All Sectors

2.2.3 Awareness raising

No	7
Measure (title)	Awareness Raising on energy-efficient appliances for national authorities, the commercial sector and the wider public
Type of measure*	*Awareness raising / information*
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Planned
Time frame (sta rt year –end year)	2015- 2017

Description of the measure	• Develop concepts for a communication and outreach strategy based on international experience and best practices, with a particular 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.
Target group **	*public administration, equipment manufacturers, retailers, end-users*
Implementing body/parties	NACCIMA, MAN, MDAs
Sector	Public, Private, and Residential

2.2.4 Financial/fiscal measures

The following measures are suggested under financing:

No	8
Measure (title)	Nigerian Energy Support Programme (NESP)
Type of measure*	Energy Efficiency financing mechanisms
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year – end year)	2015 - 2017
Description of the Measure	a) Identify relevant stakeholders for EE financing mechanisms (e.g. MDAs, financial institutions, etc.). This will include existing partners of the EE unit and also discover new relevant partners b) Meetings with relevant stakeholders to assess the state and opportunities for EE financing mechanisms c) Specific meetings with SMEDIN: The consultant shall assess how the Financial System Development Supports and the Business Enabling Environment Reforms of the SMEDIN programme can support the EE financing mechanisms. d) Collect data on EE financing mechanisms e) Identify barriers and opportunities for EE financing mechanisms in Nigeria
Target group **	EE Business groups,
Implementing body/parties	Banking and financial institutions, government?
Sector	Financial and Public Sector

No	9
Measure (title)	Clean Technology Fund
Type of measure*	Financial
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Existing
Time frame (start year –end year)	2010 -2020
Description of the measure	Climate Investment Fund / Financial: 75 Million USD (Financial) Financial intervention on Climate Mitigation for developing Countries

Target group **	Energy Sector Investors
Implementing body/parties	Federal Ministry of Environment
Sector ***	All sectors?

No	10
Measure (title)	Financing for the diffusion of energy-efficient appliances
Type of measure*	*Financial*
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Planned
Time frame (start year –end year)	2015-2017
Description of the measure	• Consult with p olitical 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.
Target group **	*public administration, equipment manufacturers, retailers, end-users*
Implementing body/parties	National Environmental Standard and Regulatory Agency, and the Standard Organisation of Nigeria
Sector	Public and Private Sectors

2.2.5 Financial/fiscal measures

No	1
Measure (title)	**Introduction of energy efficiency criteria into the national building code and establishing a link to ECOWAS directive for energy efficiency in buildings (EDEEB)**
Type of measure*	*Energy efficiency building policy/tool,*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned - Formulation and ado ption of an Energy Efficiency Guideline for buildings - Formulation and implementation of an Energy Efficiency Code for buildings - Design, construction of an energy efficient building
Time frame (start year –end year)	2015 to 2016
Description of 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, compatibil ity 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.
Target group **	*End users, public administration, planners, architects, installers, MDAs, Architects, building engineers, policy and decision makers*
Implementing body/parties	Federal Ministry of Power, Works and Housing supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Public Sector

No	2
Measure (title)	**Develop and implement a system to award energy performance certificates for public buildings in Nigeria**
Type of measure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Existing
Time frame (start year –end year)	2013 - 2017
Description of 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
Target group **	*End users, public administration, planners, architects, installers, MDAs, Architects, building engineers, policy and decision makers*
Implementing body/parties	Federal Ministry of Power, Works, and Housing
Sector	Public Sector
No	3
Measure (title)	**Development of Building Energy Efficiency Guidelines (BEEG) and a case study on the impacts of energy efficient buildings**
Type of measure*	policy/tool
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	On-going
Time frame (start year –end year)	2013 - 2017

Description of the measure	• Development of a Building Energy Efficiency Design Guideline (BEEG) in close consultation with relevant stakeholders; The Guideline addresses architects, engineers, and builders. Specific emphasis i s put on the interfaces of their work which must be considered to achieve the best possible building design result. • Outline and preparation of a dissemination strategy and material to roll-out the BEEG; • Assessment of further needs for successful roll-out of the BEEG. • Compliance and enforcement framework required for practical achievements of energy efficiency standards in buildings: It is the objective to provide information about all the other aspects which are needed for energy efficiency in buildings apart from building design (e.g. qualification of experts, awareness creation, and legal framework). • Provide information about indicators describing the energy efficiency in buildings and characteristic indicator values and the related costs for achieving a specific energy efficiency standard. This will result in a case study that will contribute to defining the energy related minimum efficiency requirements and target values of the Nigerian energy efficiency building code. • In addition, the case study resu lts will provide useful information for convincing clients to order a climate adapted energy efficient building instead of an inefficient building based on a design from abroad. Energy savings compared with the business as usual case have to be determined, as well as pay -back period. CO_2-emission savings should be estimated. Calculation of energy consumption cost is based on various billing methods (prepaid meter, smart meter, estimated billing) and energy tariffs.
Target group **	Public buildings, state agencies; Federal Ministry of Power, Works, and Housing (FMPWH), architects
Implementing body/parties	FMPWH
Sector	Public Sector
No	4
Measure (title)	Design and implementation of Energy Audits and Energy Management in Public Buildings: Case study at the FMPWH Head Quarters
Type of measure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned; pilot ongoing
Time frame (start year –end year)	2015-2016
Description of the measure	Measures aiming at reducing energy consumption in public buildings by addressing the building as such and by addressing the building operation (including user behaviour): • Conduct an energy audit • Implementation of energy management • Issuing annual energy management and energy consumption reports • Education of officials working in the buildings and of the general public on the advantages of these measures • Promotion activities etc. • Issue requests for proposals

Target group **	Public buildings, state agencies; pilot: FMPWH building
Implementing body/parties	Pilot implemented by FMPWH in cooperation with GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Public

No	5
Measure (title)	Development of Model designs for EE in small buildings
Type of measure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	Planned or ongoing?
Time frame (start year –end year)	2015-2016
Description of the measure	Develop and disseminate a compilation of model designs for sustainable construction of small buildings (alternative to mandatory legislation), with a focus on the use of local materials and simple measures; dissemination, e.g. through an online platform and production of easily understandable printed versions
Target group **	Construction industry, building owners, architects, engineers
Implementing body/parties	Federal Ministry of Power, Works and Housing
Sector	Public Sector

2.3 Energy efficient buildings initiative:

2.3.1 Policies and tools on energy efficiency in buildings

Table 16: Energy efficient buildings measures

No	1
Measure (title)	**Introduction of energy efficiency criteria into the national building code and establishing a link to ECOWAS directive for energy efficiency in buildings (EDEEB)**
Type of measure*	*Energy efficiency building policy/tool,*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned - Formulation and adoption of an Energy Efficiency Guideline for buildings - Formulation and implementation of an Energy Efficiency Code for buildings - Design, construction of an energy efficient building
Time frame (start year –end year)	2015 to 2016

Description of 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 buildin g 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.
Target group **	*End users, public administration, planners, architects, installers, MDAs, Architects, building engineers, policy and decision makers*
Implementing body/parties	FMPWH supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Public

No	2
Measure (title)	**Develop and implement a system to award energy performance certificates for public buildings in Nigeria**
Type of measure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	Existing
Time frame (start year –end year)	2013 - 2017
Description of the measure	• Development of a n 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 pe rformance register to be established and maintained by the pertinent authority
Target group **	*End users, public administration, planners, architects, installers, MDAs, Architects, building engineers, policy and decision makers*
Implementing body/parties	FMPWH
Sector	Public

No	3
Measure (title)	**Development of Building Energy Efficiency Guidelines (BEEG) and a case study on the impacts of energy efficient buildings**
Type of measure*	policy/tool
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	On-going
Time frame (start year – end year)	2013 - 2017
Description of the measure	• Development of a Building Energy Efficiency Design Guideline (BEEG) in close consultation with relevant stakeholders; The Guideline addresses architects, e ngineers, and builders. Specific emphasis is put on the interfaces of their work which must be considered to achieve the best possible building design result. • Outline and preparation of a dissemination strategy and material to roll-out the BEEG; • Assessment of further needs for successful roll-out of the BEEG. • Compliance and enforcement framework required for practical achievements of energy efficiency standards in buildings: It is the objective to provide information about all the other aspects which are needed for energy efficiency in buildings apart from building design (e.g. qualification of experts, awareness creation, and legal framework). • Provide information about indicators describing the energy efficiency in buildings and characteristic indicator values and the related costs for achieving a specific energy efficiency standard. This will result in a case study that will contribute to defining the energy related minimum efficiency requirements and target values of the Nigerian energy efficiency building code. • In addition, the case study results will provide useful information for convincing clients to order a climate adapted energy efficient building instead of an inefficient building based on a design from abroad. Energy savings compared with the business as usual case have to be determined, as well as pay - back period. CO_2 - emission savings should be estimated. Calculation of energy consumption cost is based on various billing methods (prepaid meter, smart meter, estimated billing) and energy tariffs.
Target group **	Public buildings, state agencies; FMLHUD, architects
Implementing body/parties	FMPWH
Sector	Public Sector

No	4
Measure (title)	Design and implementation of Energy Audits and Energy Management in Public Buildings: Case study at the F MLHUD Head Quarters
Type of measure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned; pilot ongoing

Time frame (start year - end year)	2015-2016
Description of the measure	Measures aiming at reducing energy consumption in public buildings by addressing the building as such and by addressing the building operation (including user behaviour): • Conduct an energy audit • Implementation of energy management • Issuing annual energy management and energy consumption reports • Education of officials working in the buildings and of the general public on the advantages of these measures • Promotion activities etc. • Issue requests for proposals
Target group **	Public buildings, state agencies; pilot: FMLHUD building
Implementing body/parties	Pilot implemented by FMPWH in cooperation with GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Public

No	5
Measure (title)	Development of Model designs for EE in small buildings
Type of measure*	Policy/tool
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	Planned or ongoing?
Time frame (start year –end year)	2015-2016
Description of the measure	Develop and disseminate a compilation of model designs for sustainable construction of small buildings (alternative to mandatory legislation), with a focus on the use of local materials and simple measures; dissemination, e.g. through an online platform and production of easily understandable printed versions
Target group **	Construction industry, building owners, architects, engineers
Implementing body/parties	FMPWH
Sector	Public Sector

2.3.2 Capacity building on energy efficiency in buildings

No	6
Measure (title)	Courses on energy efficiency in Buildings being developed by GIZ - NESP
Type of measure*	Capacity Building
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	Planned
Time frame (start year –end year)	From 2016 onwards

Description of the measure	Various course modules on energy audits, energy management and building design for architects
Target group **	Technicians, building and electrical engineers, architects. Building, energy managers,
Implementing body/parties	National Power Training Institute of Nigeria, supported by GIZ in course of its EU and German Gover nment funded Nigerian Energy Support Programme, • Centre for Renewable Energy Research , *Umaru Musa Yaradua University, Katsina* Centre for Renewable Energy Technology (CRET), *Federal University of Tech. Akure* Green Technology Development Institute (GTDI), *Uni. Of Ibadan* National Centre for Energy Efficiency & Conservation (NCEEC), *Uni of Lagos (ECN)* • National Centre for Energy Research & Development (NCERD), *Uni. Of Nigeria (ECN)* • National Power Training Institute of Nigeria (NAPTIN),Sokoto Energy Research Centre (SERC), *Uni.of Sokoto (ECN)* • BAS Consulting, *Private sector*
Sector ***	Construction sector

No	7
Measure (title)	**Capacity building, institutional strengthening and training measures on energy efficiency for the buildings value chain**
Type of measure*	*Capacity building*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year – end year)	2015 to 2020
Description of the measure	Capacity building for building and construction authorities, for implementation and enforcement (inspection, certification) of energy efficiency criteria in building codes Training for building professionals to comply with the energy efficiency standards in the building code, through use of bio-climatic technologies Development of local industries to produce building materials and equipment for high efficiency buildings Showcase bio-climatic architecture adapted to local climate conditions, through demonstration projects
Target group **	*public administration, planners, architects, engineers, installers, manufacturers of construction materials*
Implementing body/parties	FMPWH
Sector	Construction Industry

No	8
Measure (title)	**Promotion of the use of local materials in construction**
Type of measure*	*Capacity building*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year – end year)	2016-2017
Description of the measure	• Development of a catalogue of local building materials, construction, monitoring and evaluation of demonstration buildings • Establishment of testing facilities to ensure that products comply with technical requirements
Target group **	Manufacturers of construction materials, architects, engineers
Implementing body/parties	FMPWH
Sector	Construction Industry

8.4 Electricity distribution initiative

8.4.1 Policy and regulatory framework

Table 17: Electricity distribution measures

No	1
Measure (title)	Introduction of improved management practices and technical measures to diminish losses in the electricity distribution system
Type of measure*	*Energy efficiency policy*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year –end year)	Please fill in
Description of the measure	• 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

Target group **	*end users, energy suppliers*
Implementing body/parties	Transmission Company of Nigeria and all relevant Agencies including Generation and Distribution companies
Sector	Energy

8.5 Energy efficiency in the industrial sector

8.5.1 Energy efficiency policies and tools

Table 18: Energy efficiency in industry

No	1
Measure (title)	**National programs to implement an ISO-compatible Energy Management Standard (EnMS) for Industry (ISO 50001)**
Type of measure*	*Energy efficiency policy/tool*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	On-going
Time frame (start year – end year)	March 2015 to March 2017

Description of the measure	• Develop and implement a national Energy Management Standard compatible with ISO-50001 in Nigeria
	  ○ Conduct national stakeholder consultations for the development of an EnMS for industry
	• 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)
	  ○ Create capacity within relevant organizations to develop and implement a M&V programme of compliance with EnMS
	  ○ Establish a recognition scheme for EnMS experts and organizations and companies compliant with ISO 50001
	  ○ Launch accreditation programme for Energy Management Systems (EnMS) in accordance with the ISO5001 standard
	  ○ Establish (voluntary) reporting programmes on energy use in industry
	• Introduce best-practice information, dissemination and recognition programmes for industrial energy efficiency

Target group **	*Industrial users, public administration*
Implementing body/parties	Standard Organisation of Nigeria
Sector	Energy
No	2
Measure (title)	**Energy efficient motors programme**
Type of measure*	*Energy efficiency policy/tool*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year – end year)	Please fill in

Description of the measure	• Implement a program for replacement of inefficient motors such as:
	  ○ Old motors that have poor or no rewind records. Typically, efficiency is lost w hen motors are rewound without taking enough care of the magnetic core.
	  ○ 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.
	  ○ 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) by 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 Eff1 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

Target group **	*Industrial users*
Implementing body/parties	Federal Ministry of Transport
Sector	Transport
Target group **	*Industrial users, public administration*
Implementing body/parties	Standard Organisation of Nigeria
Sector	Energy

No	2
Measure (title)	**Energy efficient motors programme**
Type of measure*	*Energy efficiency policy/tool*
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned
Time frame (start year– end year)	Please fill in

Description of the measure	• Implement a program for replacement of inefficient motors such as:
	  ○ Old motors that have poor or no rewind records. Typically, efficiency is lost w hen motors are rewound without taking enough care of the magnetic core.
	  ○ 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.

	○ 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) by 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 Eff1 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
Target group **	*Industrial users*
Implementing body/parties	Federal Ministry of Transport
Sector	Transport

No	3
Measure (title)	Introduce Energy Management Systems Based on ISO 50001 in the Industry Sector in Nigeria (EnMSIN**)**
Type of measure*	Please fill in
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	In progress/planned
Time frame (start year – end year)	March 2015 - August 2017
Description of the Measure	• Advisory services to SON for adaptation of ISO 50001 for the industrial sector and capacity building for policy makers in EnMS promotion; • Training and certification of ISO 50001 energy managers jointly selected from MAN, NACCIMA and SMEDAN member firms; • ISO 50001 certification of two firms from different industrial sectors, as classified by MAN
Target group **	Industrial sites/frims
Implementing body/parties	SON, NESP, FMP, FMITI, MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Industrial

8.5.2 Capacity building for improving energy efficiency

No	4
Measure (title)	**Capacity building on industrial energy efficiency**
Type of measure*	*capacity building*
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	Planned
Time frame (start year –end year)	Please fill in
Description of 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
Target group **	*Industrial users*
Implementing body/parties	Manufacturing Association of Nigeria, NACCIMA
Sector	Industrial/Commercial

No	5
Measure (title)	Development of an industrial energy database and energy consumption benchmarks
Type of measure*	Please fill in
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	To be planned
Time frame (start year –end year)	Please fill in
Description of the measure	• Develop a national database of industrial energy consumption at subsector aggregation level which directs EE policies, and supplies objective indicators for the monitoring of industrial EE • Introduce and monitor sector - based energy indicators linked to economic activity (energy intensity) and technical practices (specific consumption, i.e. consumption expressed as a physical amount that measures industrial activity)
Target group **	industry
Implementing body/parties	Manufacturing Association of Nigeria, and NACCIMA
Sector ***	industry

No	6
Measure (title)	Training on ISO 50001 EnMS formulation and implementation for industrial facility / energy managers
Type of measure*	capacity building
Priority (1 to 5 from **highest** to lowest)	1

Existing or planned	Planned – if started in 2013, the measure should be existing
Time frame (start year – end year)	March 2013 to June 2017
Description of the measure	• Developing training design and schedule • Developing EnMS and ISO 50001 training material • Certification design of energy managers • Conduct of the training for the energy managers
Target group **	Top Management Staff of Industrial facilities
Implementing body/parties	SON, NESP, FMP WH, FMITI , MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector ***	Industry Sector

No	7
Measure (title)	Training on industrial Energy Audits for Engineers
Type of measure*	capacity building
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	Planned – if started in 2013, the measure should be existing
Time frame (start year –end year)	March 2013 to June 2017
Description of the measure	• Developing training design and schedule • Developing Energy Audits training material • Conduct of the training for industrial energy auditors
Target group **	Technical staff of industrial facilities, engineers, etc.
Implementing body/parties	SON, NESP, FMP WH, FMITI, MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector ***	Industry Sector

No	8
Measure (title)	Training on ISO 50001 certification
Type of measure*	capacity building
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	Planned – if started in 2013, the measure should be existing
Time frame (start year –end year)	March 2013 to June 2017
Description of the measure	•
Target group **	SON, private sector
Implementing body/parties	SON, NESP, FMP WH, FMITI, MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector ***	Industry Sector

2.3.3 Awareness of energy efficiency

No	9
Measure (title)	Awareness raising and information campaigns for enterprises
Type of measure*	Awareness raising and information
Priority (1 to 5 from **highest** to lowest)	2
Existing or planned	planned
Time frame (start year – end year)	Please fill in
Description of the measure	• Awareness progra mmes for SMEs, larger industries, policy makers on the benefits • Awareness raising on sources of financing for industrial EE and EE project financing • Efforts to convey this information can take a number of forms, including workshops and seminars, informal channels such as word of mouth and mass media campaigns through television, radio and internet.
Target group **	industry
Implementing body/parties	SMEDAN
Sector ***	industry

No	–10
Measure (title)	Advisory services for planning the implementation of energy efficiency networks (EENs) for industrial enterprises in Nigeria
Type of measure*	information, awareness
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	In progress
Time frame (start year – end year)	March 2015 - August 2017
Description of the Measure	• Review of learning - platform initiatives, especially Energy Efficiency Network, for promoting energy efficiency in the industry sector in selected emerging economies (e.g. Brazil, India, and South Africa). • Advisory services to NESP, the Manufacturers Association of Nigeria (MAN), the Nigerian Association of Chambers of Commerce, Industry, Mines and Agriculture (NACCIMA) and the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) in planning activities to implement EENs in the industry sector.
Target group **	industry sector
Implementing body/parties	SON, NESP, FMP, FMITI, MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Industry

No	–11
Measure (title)	Development of two case studies: ISO 50001 implementation and certification at two industrial sites in the manufacturing sector
Type of measure*	
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	In progress
Time frame (start year –end year)	March 2015 - August 2017
Description of the Measure	• Formulation and implementation of ISO 50001-based EnMS at two industrial facilities; Accompany the managers of the two sites throughout the EnMS implementation and certification
Target group **	industry sector
Implementing body/parties	SON, NESP, FMP, FMITI, MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Industry

No	–12
Measure (title)	Design and disseminate information materials and guidelines for EnMS implementation
Type of measure*	information, awareness
Priority (1 to 5 from **highest** to lowest)	3
Existing or planned	In progress
Time frame (start year–end year)	March 2015 - August 2017
Description of the Measure	• Develop Brochure(s) promoting the benefits of ISO 50001 and corresponding EnMS • Information on EnMS – design and implementation • Information on ISO 50001 certification process • Cost-benefit outline • International benchmarks as appropriate
Target group **	industry sector
Implementing body/parties	SON, NESP, FMP, FMITI, MAN, NACCIMA and SMEDAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Industry

No	–13
Measure (title)	Survey on Power and Energy Consumption in the Industrial sector in Nigeria
Type of measure*	tool

Priority (1 to 5 from **highest** to lowest)	4
Existing or planned	Completed –how can the project be completed if it lasts until 2017?
Time frame (start year – end	March 2015 - August 2017
Description of the Measure	• Provide an overview of the Industrial energy and production situation in Nigeria. • Conduct a power demand and energy consumption survey in the industrial sector, based on an agreed representative sample among the member industries of MAN, NACCIMA, and SMEDAN. • Based on the Survey, identify intervention areas and energy related priorities in the industrial sector with a focus on Energy Management Systems (according to ISO 50001).
Target group **	Stakeholders in the industrial energy efficiency field
Implementing body/parties	MAN supported by GIZ in course of its EU and German Government funded Nigerian Energy Support Programme
Sector	Industry

8.5.3 Financial/fiscal mechanisms

No	14
Measure (title)	Developing appropriate financing approaches for encouraging the emergence of investment projects
Type of measure*	financial/fiscal
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	planned
Time frame (st art year –end year)	Please fill in
Description of the measure	• Arranging lines of credit with banks. The project financing could be granted by national banking networks that refinance themselves via credit lines from lenders. • Adapting fiscal mechanisms and energy tariffs to encourage energy saving • Implementing programmes for developing industrial EE projects, including technical assistance for the project initiators • Organising a financing system that adopts quick and simple procedures for assessing less complex projects • Setting up a programme to help banks assess complex projects • Organising the bank financing system for large projects (co - generation and efficient production equipment) with borrowing conditions that will be especially favourable if the project is efficient
Target group **	industry
Implementing body/parties	Federal Ministry of Finance
Sector ***	industry

8.6 Cross- cutting measures

Table 19: Cross-cutting measures

No	1
Measure (title)	Awareness raising campaigns on energy efficiency
Type of measure*	Awareness raising
Priority (1 to 5 from **highest** to lowest)	1
Existing or planned	planned
Time frame (start year –end year)	2015-2016
Description of the measure	• Inclusion of information/training/EE subjects/informational activities in school curricula and at the local area. This is important because (a) it raises awareness of the benefits of efficient energy use with current and future energy users, and (b) it ensures that future decision - makers and professionals will pay due attention to energy efficiency • Awareness raising measures targeting specific groups (e.g. consumers (male/female), decision makers, specific professional groups like installers, architects, engineers, technicians, local administration, energy utilities etc.) • Development of websites with information on energy efficient products and practices • Development of movie documentaries and/or TV spots, radio messages and cartoons that inform the viewer about energy efficiency • Distribution of brochures/le aflets and posters or advertisements in public areas • Holding of “Energy Efficiency Days” at the national level
Target group **	Different target groups including children and general public
Implementing body/parties	Federal Ministry of Environment, SON, and NESREA
Sector ***	All sectors

9 Preparation of the National Energy Efficiency Action Plan

Public consultation was carried out throughout the whole process of developing the NEEAP. An Inter-ministerial Committee on Renewable Energy and Energy Efficiency (ICREEE) Inception meeting with the Honourable Ministers of Power and the Permanent Secretary was held where the objective of the action plan was presented and discussed. A thematic working group arising from the need to complete the template was also set up. The thematic group was structured in a manner that allowed wide stakeholder inputs into the template from both public and international organisations. A stakeholder validation workshop was also held in September 2014 to validate data obtained from all sources. The event was well attended by participants from public, private, academic, and NGO organisations. The public consultation process also included regional and local authorities as well as city representatives. Stakeholder involvement included public service bodies, namely the ICREEE team, and international donors: GIZ and UNDP-GEF.

10. IMPLEMENTATION AND MONITORING OF THE NATIONAL EFFICIENCY ENERGY ACTION PLAN

The following institutions are responsible for the follow-up of the National Energy Efficiency Action Plan:
Federal Ministry of Power Works and Housing (FMPWH)
Federal Ministry of Environment (FME)
Nigerian National Petroleum Cooperation (NPC)
Standard Organisation of Nigeria (SON)
Energy Commission of Nigeria (ECN)
A national monitoring system to follow-up the implementation of the NEEAP is being worked on in with the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) framework, The National Renewable Energy and Energy Efficiency Policy approved by the Federal Executive Council in May 2015 as well as the updated version of the National Energy Policy (NEP) 2013 made provision for monitoring systems which will be implemented as soon as they are finally approved. Similarly, the Standard Organisation of Nigeria (SON) is also working with UNDP-GEF to finalise standards, labels and measure for the sub-sector with respect to Refrigeration, light bulbs, etc.

ANNEX I – Definition of Terms Used in the NEEAP

The terms described here have been organised alphabetically.
Bagasse: the fuel obtained from the fibre which remains after juice extraction in sugar processing
Biomass: biodegradable fraction of products, waste and residues from biological origin from agriculture (including vegetal and animal substances), forestry and related industries including 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 traditional, low-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 biodiesel and bioethanol as a substitute for oil-based products in transport.
BRT: Bus Rapid Transit Systems
Building: a roofed 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 been designed or altered to be used separately; buildings' definition includes individual houses and multi-family houses, commercial buildings, public buildings.

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

CFL: Compact Fluorescent Lamp
Charcoal: The solid residue from the carbonisation of wood or other vegetal matter through pyrolysis. The amount of biomass (usually fuelwood) necessary to yield a given quantity of charcoal depends mostly on three factors:

- parent 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 of 2 for equal volumes
- moisture content - moisture content of the wood also has an appreciable effect on yields - the drier the wood, the greater is the yield - ; and
- the 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 production generally involve loss of powdered charcoal (fines), incomplete carbonization of the fuelwood and combustion of part of the charcoal product, resulting in lower yields.

Traditional non-efficient charcoal production methods: traditional charcoal production methods include open pits, oil drums and kilns with lower efficiencies. In the ECOWAS charcoal is 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 impacts on the health and on the environment.
Efficient charcoal production: efficient charcoal is the terminology used on this template for the charcoal

l produced by modern methods that are more efficient than traditional ones. The modern methods use sealed containers and have higher efficiencies and thus higher yields. Within the EREP, under the targets for domestic cooking, a target for efficient charcoal production is set: 60%/100% of the charcoal production should be by improved carbonisation techniques (yield >25% in 2020 and 2030, respectively. In this template the 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 carbonisation techniques with yield superior to 25% in tonnes by the total charcoal production in tonnes.

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

CRSO: Collectizon & Recycling Service Organisations

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

Energy performance 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 may include, inter alia, water heating, cooling, ventilation, use of daylight, shadowing systems and components, as well as electricity consumption for lighting and other uses as computer, domestic appliances, etc. This amount shall be reflected in one or more numeric indicators which have been calculated, taking into account insulation, technical and installation characteristics, design and positioning in relation to climatic aspects, solar exposure and influence of neighbouring structures, own-energy generation and other factors, including indoor climate, that influence the energy demand;

Energy savings: means an amount of saved energy determined by measuring and/or estimating consumption before and after implementation of an energy efficiency improvement measure, whilst ensuring normalisation for external conditions that affect energy consumption

Energy efficiency: 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 consumption for the same type of product or service.

Energy service: 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 operations, 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 and measurable or estimable energy efficiency improvement or primary energy savings

EEEP: ECOWAS Energy Efficiency Policy

Energy Intensity: 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-economic indicator 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 currency value, for instance: toe/GDP at year 2005 USD at purchasing power parity.

EREP: ECOWAS Renewable Energy Policy

Primary energy 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 consumption 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 impact of inflation, base year 2005.

EnMS: Energy Management System
Energy saving performance contracts (ESPCs): An energy savings performance contract is an agreement between a building owner and an energy services company (ESCO) for the identification, evaluation, recommendation, design and construction of energy conservation measures, including a design-build contract, that guarantee energy savings or performance.
Energy Service Company (ESCO): The ESCO approach combines a financial service with technical services, thus simplifying energy savings for the user, by:

- o choosing energy efficiency measures adapted to the user's needs;
- o financing the purchase of necessary equipment;
- o installing the equipment;
- o in some cases, operating and maintaining the equipment;
- o Measuring the energy savings achieved, and billing the customer for a part of the savings.

Final Energy 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 and excludes that which is used by the energy sector itself. This includes electricity and fuels (such as oil, gas, coal, woodfuel etc.).
GDP: Gross Domestic Product. To monitor trends, GDP is in constant prices to avoid the impact of inflation, base year 2005.
Gigawatt-hour (GWh): 1,000,000,000 watt-hours.
Import and export: Import and export comprise quantities having crossed international boundaries.
Improved cookstoves (also called clean/efficient cookstoves): is a device that is designed to consume less fuel and save cooking time, convenient in cooking process and creates smokeless environment in the kitchen or reduction in the volume of smoke produced during cooking against the traditional stove; and thus addressing the health and environmental impacts associated with traditional cookstoves. Traditional cookstoves (open fires and rudimentary cookstoves using solid fuels like wood, coal, crop residues and animal 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 cookstoves also place pressure on ecosystems and forests and contribute to climate change through emissions of greenhouse gases and clack carbon.

Within the EREP targets are set for improved cookstoves, as the pressure on the ECOWAS woodland will grow exponentially. Thus the policy includes the banning of inefficient stoves after 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 and 100% of 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 in terms of the % 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 inhabitants of the country.
Informal building: Traditional buildings or buildings built without legal authorisation;
Kilowatt (kW): 1,000watts
Kilowatt-hour (kWh): 1,000watt-hours.
ktoe: thousand tonnes of oil equivalent
LED: Light Emitting Diodes
LPG: Liquefied petroleum gas
Major renovation: 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 also the addition of a new room with a useful area of more than 12 m2.
Megawatt (MW): 1,000,000 watts
Megawatt-hour (MWh): 1,000,000 watt-hours
Modern fuel 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 conventional solid fuels such as coal, fuelwood and charcoal. These alternatives cover Liquefied petroleum gas (LPG), biogas, ethanol, solar power (e.g. solar cookers) and kerosene. In this template improved cookstoves are not considered within the modern fuel alternatives, as they are object of a separate analysis in this template.

MS: (ECOWAS) Member States

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

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

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

Solar cookers: 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.

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

Technical losses 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 transmission lines and transformers due to internal electrical resistance. Technical losses can be divided into transmission losses, occurring in the high voltage part of electricity grids, and distribution losses, occurring between the last power sub-station and the user's meter.

toe: tonnes of oil equivalent

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

UNEP-GEF enlighten initiative: The United Nations Environment Programme (UNEP)-Global Environment Facility (GEF) enlighten initiative was established in 2009 to accelerate a global market transformation to environmentally sustainable, energy efficient lighting technologies, as well as to develop strategies to phase-out inefficient incandescent lamps to reduce CO2 emissions and the release of mercury from fossil fuel combustion. The enlighten initiative serves as a platform to build synergies among international stakeholders; identify global best practices and share this knowledge and information; create policy and regulatory frameworks; address technical and quality issues; and encourage countries to develop National and/or Regional Efficient Lighting Strategies.

USD: US Dollars

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

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

VAT: Value Added Tax

WACCA: West African Clean Cooking Alliance

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

The purpose of the template is to aid ECOWAS countries in developing NEEAPs that are complete and cover all the recommendations defined in the EEEP. Use of this template will aid ECOWAS countries in developing plans that are comparable with each other. This will aid in monitoring the progress towards achievement of the EEEP targets, which ECOWAS countries will report in the future, through reports on implementation. Additional information can be provided either in the prescribed structure of the Action Plan or by including annexes.

The main steps in the NEEAP process are outlined in the figure below. As part of the monitoring and verification

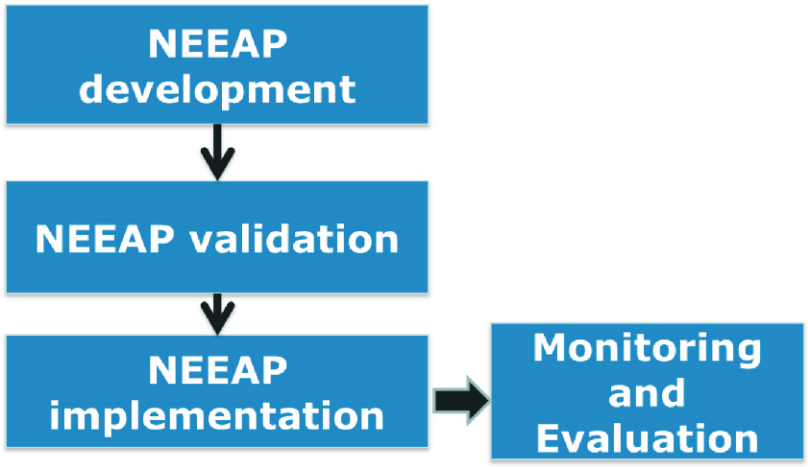

Figure 1: Main steps in NEEAP

The NEEAP will be developed as a collaborative and mutually supportive effort between the national consultants, the NEEAP Country Group (NCG) and ECREEE.

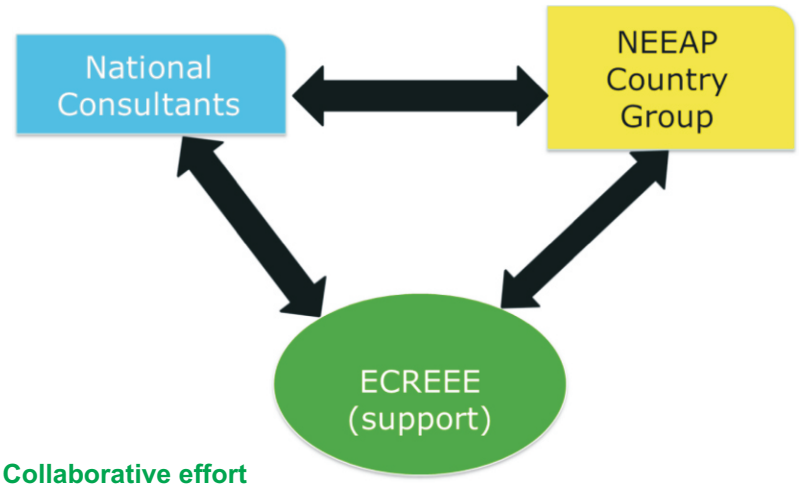

Figure 2 : NEEAP Collaborative effort

The NEEAP template considers national actions both at the level of the ECOWAS energy efficiency initiatives as well as at the level of energy consumption sectors. As guidance, the following matrix presents in an indicative manner the relationships between the EE initiatives and the different sectors considered here. Measures within a given initiative can encompass several sectors (e.g. EE Lighting or EE buildings cutting across residential, commercial/services and public sector). In their turn, measures in a given sector (e.g. residential) could encompass several initiatives.

	EE Lighting Initiative	EE Standards and Labeling Initiative	EE Buildings Initiative	High performance electricity distribution initiative	Safe, affordable, clean and sustainable cooking initiative
Residential sector	X	X	X	X	X
Tertiary sector (commercial and services)	X	X	X	X	X
Industrial sector	X	X	X	X	
Transport sector					
Public sector	X	X	X	X	
Energy supply					
Other sectors					

Table 20 : Comparison Energy Efficiency measures

ANNEX II. REGIONAL INITIATIVES AND ACTIONS IN ENERGY EFFICIENCY

1. ECOWAS ENERGY EFFICIENCY PROGRAMME

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

SEEA-WA focuses 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 Energy Efficiency (ECREEE), SEEA-WA seeks to combine improved energy efficiency with ongoing work on renewable energy sources, in order to broaden energy access.

SEEA-WA OBJECTIVES

The overall objective of SEEA-WA is to improve framework conditions for access to energy services, by supporting the creation of a regional programme on governance, related to energy efficiency and access. The specific objective is to:

- Aid the Development of policies and regulatory frameworks necessary for the adoption of energy efficiency measures;
- Raise the awareness of policy makers, regarding the commercial actors in the key energy value chains.
- Build capacity at the regional and national level to facilitate implementation of the key energy efficient technologies.

2. SEEA-WA DESCRIPTION

2.1 Framework conditions:

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

Raising Awareness:

Many energy efficiency measures pay for themselves, through savings on energy bills. Capturing this potential for savings requires decisions by a myriad of individuals, organisations 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 builders and 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 energy and make the decisions on purchasing (or producing themselves) the major energy using devices.

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

Regional action 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 services, as well as the majority, for whom gaining access to affordable modern energy depends on reducing costs so as to make access programmes economically viable.

2.2. Main Activities:

- Energy Efficiency stock taking, diagnosis in ECOWAS countries.
- Regional level institutional capacity building, knowledge sharing.
- National level institutional capacity building, knowledge sharing, institutional change.
- Development of ECOWAS EE White Paper.
- Formulating gender-sensitive energy efficiency policies and programmes.

2.3. Content and visual identity:

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

2.4. SEEA-WA Actions

2.4.1. Actions at the National Level

- Identification of a national Competence Centre for Energy Efficiency
- Stock taking of the current EE situation in the countries
- Supporting the identification and development of concrete EE actions

2.4.2. Actions at the Regional Level

- Energy Efficiency White Paper
- Development of policy tools (e.g. labels and standards)
- Establishment of a network (Exchange of information, best practice and lessons learned)
- Regional trainings on specific issues

3. THE EE POLICY (EEEP) AND TARGETS

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

The ECOWAS Energy Efficiency Policy seeks to contribute to creating a favourable environment for private investments in energy efficiency, and spurring industrial development and employment through reduction of energy bills. Energy efficiency is considered as an integral part of the modernisation and greening of West African economies. 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 efficiency, so 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 decrease by about 4% annually.

The specific targets of the regional energy efficiency policy are:

1. Phase out inefficient incandescent lamps by 2020;
2. Reduce average losses in electricity distribution from the current levels of 15 - 40% to the world standard levels of below 10%, by 2020;
3. Achieve universal access to safe, clean, affordable, efficient and sustainable cooking for the entire population of ECOWAS, by 2030;
4. Adopt region-wide standards and labels for major energy equipment by end of 2014;
5. Develop and adopt region-wide efficiency standards for buildings (e.g. building codes);
6. 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.

3.1. The policy Answer

- Adoption of the White Paper on Access to Energy in 2006
- Creation of ECREEE in 2007: ECOWAS Centre for Renewable Energy and Energy Efficiency
- The SEEA-WA project - financed by the ACP-EU Energy Facility, UNDP, ADEME - supported the development of a regional Energy Efficiency Policy. Approved in 2012 by the region's Heads of State.

3.2. The Policy Targets

A process that 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, January 2006) 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 and Peri-Urban Areas in Order to Achieve the Millennium Development Goals". The White Paper contains the following ambitious numerical targets for access to modern cooking fuel, to mechanical power for productive activities, and to electricity:

- 100% access to a modern cooking fuel;
- 60% access in rural areas to productive energy services in villages, in particular mechanical power to boost the productivity of economic activities;
- 66% access to an individual electricity supply;
- 60% of the rural population will live in localities with:
- modernised basic social services - healthcare, drinking water, communications, lighting, etc;
- access to lighting, audiovisual and telecommunications service, etc.;
- The coverage of isolated populations with decentralised approaches.

4. THE ECOWAS PROGRAMME ON GENDER MAINSTREAMING IN ENERGY ACCESS (ECOW-GEN)

In 2013, the ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) launched a flagship programme entitled ECOWAS Programme on Gender Mainstreaming in Energy Access (ECOW-GEN). The programme was established against the background that women's potential, in the ECOWAS region, as producers and suppliers of energy services is under-utilized and that empowering women to make significant contributions in the implementation of the adopted regional renewable energy and energy efficiency policies is necessary for the achievement of the Sustainable Energy for All (SE4ALL) goals in West Africa. Moreover, the programme is founded upon the principles of the ECOWAS Gender Policy which emphasizes the “need to develop policies and programmes to provide alternative energy sources which would contribute to women's health and also alleviate their time burden”.

To stimulate the development of women-led business initiatives in the energy sector, ECREEE, through the support of the Spanish Agency for International Cooperation and Development (AECID), established the ECOWAS Women's Business Fund. ECREEE will work with Member States to identify and support, through the fund, innovative energy projects implemented by women groups and associations. In addition to this, ECREEE will assist Member States to establish similar funds in their respective

5. THE ECOWAS SOLAR THERMAL PROGRAM

The overall 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 system based on renewable energies in general but based on solar thermal in particular. The overall project will be coordinated by ECREEE and technically implemented by AEE INTEC in cooperation with 8 institutional project partners from 7 West African countries (Cape Verde, Nigeria, Burkina Faso, Ghana, Mali, Senegal, Niger and Sierra Leone).

The ECOWAS solar thermal capacity building and demonstration program therefore aims to remove existing awareness, political, technological, and capacity related barriers which restrict solar thermal energy deployment in ECOWAS countries. The program will also contribute to increase the grid stability and save

national power reserves as solar thermal systems 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 polices on Renewable energy and energy Efficiency adopted by the ECOWAS Authority of Heads of State and Government in 2013. The regional policies considered solar thermal as a least cost sustainable energy technology and set specific targets for its use to meet sanitary and industrial hot water needs in the region.

The goals of SOLtrain West Africa are:

- Capacity Building by theoretical and practical Train-the-trainer courses to selected universities and polytechnic schools in the area of solar water heating and solar thermal drying
- Identify, monitor, analyse and improve existing solar thermal systems together with the partner institutions (practical training).
- Technical support of local producers.
- Design and Install solar thermal systems on the partner institutions for teaching and demonstration purposes.
- The partner institutions will offer trainings to national companies, installers, producers and further training institutions within their countries.
- Installation of 200 Demonstration systems at social institutions as schools and hospitals engineered by the partner institutions and installed by national practitioners
- Trainings to administrative, political and financial stakeholders in each country
- Solar thermal testing facility in one of the countries

The program 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 polytechnic schools and universities in all 15 ECOWAS Member States.

6. PROSPECTS FOR THE FUTURE

To be able to 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-by-step implementation of these initiatives is described below.

6.1. Specific EE initiatives

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

- Standards and labeling
- Efficient Lighting,
- High performance of Distribution of Electricity,
- Energy Efficiency in Buildings,
- Safe, Sustainable and Clean Cooking,
- Financing Sustainable Energy.

7. STANDARDS AND LABELING

The main components of the ECOWAS energy efficiency Standards and labeling initiative are as follows:

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

7.1. Key Actions on standards and labeling at regional and national levels

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

(See Sub-Annex 1a for standards and labeling implementation phase actions **)**

8. EFFICIENT LIGHTING

To ensure effective 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 lighting have been designed for implementation in these countries. These actions cover the four parts of the integrated policy approach:

- Minimum Energy Performance Standards (MEPS);
- Supporting Policies and Mechanisms (SPM);
- Monitoring, Verification and Enforcement (MVE); and
- Environmentally Sound Management (ESM).

The scope and 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 planned; or ii) some MEPS/SPM/MVE/ESM activities underway or planned; or iii) no MEPS/SPM/MVE/ESM activities. In order to meet the objectives of this Strategy, it is intended that energy efficiency interventions will be implemented through a phased approach. The timing of the three Phases is as follows:

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

The key activities under the four thematic areas of the Strategy are summarized as follows:

8.1 Minimum Energy Performance Standards – Key Activities

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

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

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

Table 21:key requirements MEPs for Mains-Voltage Lighting

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

- Lamp Lifetime – lamps shall have a rated lamp lifetime of 6000 hours or more, as measured according to the appropriate IEC test standard.
- Power Fluctuation Tolerance – lamps shall be able to operate within a voltage range of 160 - 260V.
- Power 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

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

The key requirements under the Minimum Energy Performance Standard for Of f-Grid Lighting Products include:

- **Lumen 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 hours(depreciated at highest setting) (draft)

- **Durability and Quality** – the off-grid lighting product must comply with the following quality standards:
- **Charger** – any included AC -DC charger must carry approval from an accredited consumer electronics safety regulator.
- **Battery** – must be protected by an appropriate charge control ler that prolongs battery life and protects the safety of the user. No battery may contain cadmium or mercury at levels greater than trace amounts.
- **Water 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
- **Brightness** – At least one lighting level, which defines the "specified light output" in subsequent testing, must meet one of the following criteria:
- Light 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.

8.2 Supporting Policies and Measures – Key Activities

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

8.3. Monitoring, Verification and Enforcement – Key Activities

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

8.4. Environmentally Sound Management – Key Activities

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

9. ENERGY EFFICIENCY IN BUILDINGS

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

9.1. General Activities of national interest

Other activities that could be incorporated into different national actions include:

- Identifying and analysing the real energy data consumption of buildings in ECOWAS countries in order to propose reference values on energy consumption, and also prepare regional standards and labelling for energy performance of buildings;
- Specifying the contents of existing building codes and legislations on energy efficiency in buildings in the 15 ECOWAS;
- Individual countries to revise or develop building codes and legislations on energy efficiency in buildings in order to transpose the regional directive into National building codes;
- Carrying out pilot projects of energy performance construction in countries (for example construction of bioclimatic schools showing experiences and local materials

9.2. National training programmes on EE in Buildings

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

10. HIGH PERFORMANCE OF DISTRIBUTION OF ELECTRICITY

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

- Facilitating sharing of experience and best practices among West African distribution companies.
- Carrying out regional capacity building programmes.
- Facilitating the sharing of human and technical resources among West African distribution companies.

- Creating a data base, through cooperation between WAPP and the ECREEE Energy Observatory, on the state of the electricity sector in the ECOWAS countries, including production, losses, tariffs, etc.
- Creating awareness among national political leaders on the issues, opportunities and obstacles to improving power distribution, through high level political events at the regional level.
- Creating a large West African market in high performance distribution equipment, so as to lower costs, through regional standards for equipment.
- Fostering regional production of high performance distribution equipment, to feed a regional market.
- Supporting the creation of a West African research network for power distribution, adapted to West African conditions.
- Facilitating financing of national upgrading programmes, through regional meetings with development and finance partners.

11. SAFE, SUSTAINABLE AND CLEAN COOKING

11.1 Policy and regulatory framework

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

11.2 Regional initiatives to support national actions

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

A national action plan could be developed around the following intervention logic:

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

11.3. Possible measures to develop LPG programmes include, among others:

- Modernizing regulatory frameworks
- Formally adopting of international quality and safety standards
- Improving roads and port infrastructure and reducing port congestion
- Communicating information widely to the public in nontechnical language, specifically, address perception of high risk of LPG use for cooking in households

- Facilitating operator training
- Monitoring to discourage commercial malpractice as well as raise public awareness
- Offer incentives to encourage private LPG retail/service companies to build up distribution network and retail outlets
- Developing financial schemes such that LPG marketers can offer micro-finance schemes, and can lower barriers to LPG selection by making it easier to finance cylinder deposit fees and stove purchases

The specific objectives of the safe and sustainable cooking initiatives include:

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

- Conducting training courses for new entrepreneurs wherever required
- Conducting refresher courses for successful entrepreneurs

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

- Ensuring quality of the products through continuous monitoring and evaluation
- Encouraging local banks and financing institutes to support the new businesses

c) Establishing the use of improved biomass fuels as a common practice for rural households by:

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

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

Examples:

- Involve women in the conceptualization, development and implementation of energy policies, projects and programmes as much as possible
- Produce promotional messages to address the gender issue and attempt to form partnerships with women's groups (or NGOs in the area)
- Develop programmes to train young women to produce, operate and maintain equipment on their own
- Develop and implement gender-responsive national policies and programmes on clean and efficient cooking
- Economic empowerment of women through their increased involvement in the cooking energy value chains
- Capacity building of policy makers and practitioners to integrate gender in their cooking energy policies and programmes
- Integration of gender indicators in all baseline studies
- Conduct 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 to different production modes
- Development of practical guidelines for mapping gender in the cooking energy value chains
- Gender 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 sensitive

The ECOWAS Centre for Renewable Energy and Energy Efficiency (ECREEE) initiated a regional Cooking Energy initiative called West African Clean Cooking Alliance (WACCA). It 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 access to clean, safe, efficient and affordable cooking energy in the entire ECOWAS region. The principal goal of the initiative is to improve living conditions (economic, social and health) of the population of ECOWAS countries through an increased access to cleaner and more efficient cooking fuels and devices, sustainable biomass and modern fuels, while reducing local (deforestation) and global (greenhouse gases emissions) environmental impacts. The WACCA objectives are in line with the overall objective of ECREEE to 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 ECOWAS population shall have access to clean, safe, efficient and affordable cooking energy.

At regional level, WACCA is set to build upon existing interventions on the various fuels and technologies, accumulate and share knowledge on the available existing technologies and technical approaches. WACCA will facilitate the adoption of standards for cooking technologies in accordance with international agreements as developed under the Global Alliance for Clean Cookstoves (GACC) and through that, enhance and complement activities implemented in the framework of the ECOWAS Regional Programme on Sustainable Energy for All (SE4ALL) through the use of Renewable Energy (promotion of alternatives of Fuelwood) and

Energy Efficiency (ECOWAS Initiative on Standards 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 be strengthened and a consistent system for monitoring and evaluation in accordance with other monitoring and evaluation systems will be developed at regional level.

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

Agencies and organisations working together with ECREEE include:

- ETC-Energia,
- Global Alliance for Clean Cookstoves (GACC)
- Austrian Energy Agency (AEA)
- GERES,
- GIZ and
- ICEED

Sub-Annex 1a: Standards and labeling Implementation phase actions

Table 22: Standards and labelling Implementation phase actions

Step	Description	Priority	Resource Needs
1	**Implementation of core activities**		
1.1	Conduct training and informational workshops to educate and build capacity among stakeholders. For instance: - *Training workshop s 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
1.2	Initiate the Institutional Development Plan.	H	H
1.3	Initiate the Monitoring, Verification, and Enforcement Plan.	H	M
1.4	Initiate the Monitoring & Evaluation Plan	H	M
1.5	Initiate the Communications Plan and launch awareness campaigns	H	H
2.0	**Product Policy Implementation**		
	Assess international product definitions, test protocols, rating schemes, performance level definitions, certification procedures,		

2.1	technical anal yses, and data sources for use as a baseline in development of S&L policy for the selected product category	H	L
2.2	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
2.3	Development of minimum energy performance standards (MEPS) for selected products on the basis of market analysis a nd international benchmarking	H	M
2.4	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
2.5	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
2.6	Finalize requirements for certification and regional recognition of qualified products	H	L
3.0	**Implementation of complementary activities**		
3.1	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
4.0	**Financing of implementation of the S&L initiative**		
4.1	Explore options for technical assistance and develop proposals for potential donors in order to secure funding for implementation of the S&L	H	L

Notes: H=High, M=Medium, L=Low