



SCALING UP SUSTAINABLE COOLING IN NIGERIA'S NATIONALLY DETERMINED CONTRIBUTION

## ADVANCING AIR CONDITIONERS' ENERGY EFFICIENCY REGULATION, COMPLIANCE AND ENFORCEMENT

*Implementation of key recommendations from the National Cooling Action Plan under the Project "Scaling Up Sustainable Cooling in Nigeria's Nationally Determined Contribution"*

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## ACRONYMS

ACs	Air Conditioners
AfDB	African Development Bank
BAU	Business-as-usual
BPP	Bureau Public Procurement
DCC	Department of Climate Change
ECN	Energy Commission of Nigeria
ECOWAS	Economic Community of West African States
EE	Energy Efficiency
EI	Energy Efficiency Index
EER	Energy Efficiency Ratio
EU	European Union
FME	Federal Ministry of Environment
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
GIZ	German International Cooperation Agency
GWP	Global Warming Potential
IAF	International Accredited Firm
IEA	International Energy Agency
IEC	International Electrotechnical Commission
JICA	Japanese International Cooperation Agency
kWh	Kilowatts hour
LCC	Life Cycle Cost
MANCAP	Mandatory Conformity Assessment Programme
MEPS	Minimum Energy Performance Standards
MP	Montreal Protocol
MtCO <sub>2</sub> -eq	Metric tonnes of CO <sub>2</sub> Equivalent
MVE	Monitoring, Verification and Enforcement
NBS	Nigeria Bureau of Statistics
N-CAP	National Cooling Action Plan for Nigeria
NCCC	National Council on Climate Change
NCS	Nigeria Customs Services
NDC	Nationally Determined Contribution
NESP	Nigeria Energy Support Programme
NESREA	National Environmental Standards and Regulation Enforcement Agency
NICIS	Nigeria Integrated Custom Information System
NIS	Nigeria Industrial Standard
NOO	National Ozone Office
ODS	Ozone Depleting Substances
PAM	Product Authentication Mark
PCD	Product Certification Department
PPP	Public Private Partnership
RAC	Refrigeration and air conditioning
SEER	Seasonal Energy Efficiency Ratio
SON	Standards Organization of Nigeria
SONCAP	Standards Organization of Nigeria Conformity Assessment Programme
TC	Technical Committee
U4E	UNEP's United for Efficiency
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
US	United States

## EXECUTIVE SUMMARY

Cooling appliances (refrigerating and air conditioning appliances) contribute significantly to residential electricity consumption. In Nigeria, studies by the Energy Commission of Nigeria revealed that averagely refrigerators and air conditioners consume about 40% of total households' electricity consumption. The uptake of cooling equipment is expected to increase with population and economic growth. If unaddressed this demand could lead to the use of energy inefficient appliances further overloading the electricity network and resulting in high running costs for consumers. The Nigerian government has demonstrated commitment to promote the use of energy efficient and climate friendly cooling appliances and developed the Nigerian Cooling Action Plan (N-CAP) in 2022. The N-CAP proposed actions to be taken nationally to reduce GHG and ODS emissions in the RAC sector through the use of coherent policies. It provides the pathway for the country to lower the indirect and direct emissions in the cooling sector through the enforcement of energy efficiency policies and regulations and the phasedown of global warming potential (GWP) refrigerants and foam blowing agents.

The N-CAP has proposed the review of the current minimum energy performance standards (MEPS) for air conditioning appliances to more stringent levels. To achieve these recommendations will require engagement of relevant stakeholders as well as engaging predetermined national procedures and processes. These procedures and processes are vital to nationalize and institutionalize the recommendations provided in the N-CAP document. Thus, the objective of this document, developed in the context of the "Scaling Up Sustainable Cooling in Nigeria's NDC" project led by the Energy Commission of Nigeria in partnership with UNEP's U4E' is to propose the strategies and rationale to implement N-CAP's recommendations on upgrading the energy efficiency regulations for Air Conditioners and strengthen compliance on energy performance standards and labelling scheme in Nigeria.

The implementation of energy performance standards for air conditioning appliances will have both environmental and economic benefits. The analysis carried out in the N-CAP revealed that the implementation of the existing MEPS for air conditioners will lead to a 5% reduction in energy demand by 2050 and adopting a stronger MEP such as the one proposed by U4E will lead to a reduction of 24 % compared to business-as-usual. Similarly, the implementation of the existing MEPS for AC will result in about 3% reduction in GHG emissions while adopting a stronger MEPS will result in emissions reduction of 38% (equivalent to about 50 MtCO<sub>2</sub>-eq over the 30-year period. The N-CAP shows that the more efficient and air conditioning appliance, the lower the life cycle cost.

The implementation of the existing MEPS for air conditioners has faced several challenges. Among these challenges are the inadequate awareness of the MEPS among stakeholders and the lack of capacity of authorities to implement and enforce this standard. Moreover, the implementation of the AC MEPS has been stalled due to the ECOWAS energy label harmonization process and the SON process to introduce Product Authentication Mark (PAM). The SON had suspended the enforcement of MEPS in order not to subject manufacturers to frequent adjustment of their production lines as this comes as a significant cost to the manufacturers.

Policy adoption processes are better carried out using a bottom-up consultation approach where stakeholders relevant to the implementation of the proposed policy are adequately consulted and ensured that they are part of the process. The proposed approach is a stakeholder-driven process with the government playing a coordinating role. Under this approach, e.g., manufacturers can begin to adjust their product to conform with the new policy even before it is approved for implementation.

The N-CAP proposed actions to be taken nationally to reduce GHG and ODS emissions in the RAC sector through the use of coherent policies and strategies. It provides the pathway for the country to lower the indirect and direct emissions in the cooling sector through the implementation and enforcement of energy efficiency policies and regulations and the phasedown of global warming potential (GWP) refrigerants and foam blowing agents.

The “Scaling Up Sustainable Cooling in Nigeria’s NDC” project led by the Energy Commission of Nigeria in partnership with UNEP’s U4E and financial support by the Clean Cooling Collaborative aims to accelerate the transition to energy-efficient and climate-friendly (lower-GWP refrigerant) ACs. The project provides technical assistance to implement priority recommendations from the N-CAP, including, “(i) integrate cooling targets in the revised NDC; (ii) implement an awareness campaign to promote energy efficient and climate-friendly ACs; (iii) upgrade the AC minimum energy performance standards (MEPS) and energy labels (iv) recommend protocols and provide training on to enhance monitoring, verification and enforcement (v) provide technical capacity building for technicians to support proper installation of new, energy-efficient, climate-friendly room air-conditioners; and (vi) the development of the present document to guide the process”. Table 1 suggests the approach to implement the activities above.

*Table 1. Implementation plan for the review of Air Conditioning MEPS in Nigeria*

Activities	Responsible Parties	Description of Roles	Estimated Timeline
<b>Baseline Data Collection and Analysis</b>	ECN, NCS, SON, NBS, UNEP, DCC, NOO, NCCC	The ECN will coordinate the baseline data collection with technical assistance from UNEP. NCS, SON, NBS, DCC, NCCC and NOO will complement the effort by making available the data required for the analysis. The output from the activity will be the draft report of the baseline study	Q2 to Q3 of 2023
<b>Design of Energy Performance Metrics</b>	SON, ECN, UNEP	With the analysis from the baseline study, the SON working with the ECN with technical inputs from UNEP will define the MEPS levels. The output from this activity will be the draft MEPS	Q3 of 2023
<b>Stakeholders Validation</b>	ECN, SON, UNEP	The first presentation of the draft MEP will be done in national stakeholders’ workshop that will be jointly organized by the ECN and SON. This will be supported by UNEP and CCC.	Q4 of 2023
<b>Working Group Review</b>	SON, ECN, UNEP	Where necessary, the draft MEPS will be sent to different working groups (Fig. 3.3) for their inputs. This will be coordinated by the SON with support from ECN, UNEP and CCC	Q1 of 2024
<b>Technical Committee Meeting</b>	SON	SON will inaugurate the Technical Committee that will review the draft MEPS before they are sent to the SON Council for political endorsement.	Q1 of 2024
<b>SON Council Approval</b>	SON	After the review by the TC, the document will be sent to SON Council for approval.	Q2 of 2024
<b>Awareness Creation</b>	SON, ECN, UNEP	The content of the new MEPS will be communicated to stakeholders through a workshop that will be jointly organized by SON and ECN	Q3 of 2024
<b>Capacity Building</b>	SON, ECN, UNEP	MVE training and Technical Training	Q4 2023 and Q2 2024

The influx of substandard products in the Nigerian market is an indication that there may be pending limitations to the current compliance framework. The complete lack of verification testing at the port of entering poses a limitation to the current compliance framework. Moreover, the current system also lacked a Product Registration System (PRS). To address, third-party verification at the port of entering and PRS should be mainstreamed into the conformity assessment framework.

This document has proposed the following strategies to strengthen air conditioner MEPS implementation and enforcement: integrate energy efficiency into government procurement processes; introduce financial schemes to improve Nigerians' access to affordable and sustainable cooling appliances and build the capacity of relevant state and non-state stakeholders.



# CHAPTER 1: OVERVIEW OF THE NATIONAL COOLING ACTION PLAN

## 1.0 Introduction

Refrigeration and air conditioning appliances contribute significantly to residential electricity consumption. According to the International Energy Agency (IEA), in countries that are located in the hot climate, cooling is a significant contributor to global GHG emissions, usually contributing between 5% and 15% of energy-related emissions (IEA, 2018). In 2015, the global outlook shows that air conditioners accounted for approximately 20% of the residential electricity demand in 150 developing and emerging countries (FME, 2022). The UNEP-U4E Report (2017) showed that refrigerating equipment accounted for approximately 10% of global electricity consumption in households. The study conducted in Nigeria using energy logger devices to monitor households’ electricity consumption revealed that averagely refrigerators and air conditioners consume about 40% of total households’ electricity consumption (Fig. 1.1) in urban areas (ECN & GEF-UNDP, 2014). Furthermore, space cooling accounted for over 60% of electricity consumption in selected government buildings in Abuja, according to a study conducted by the ECN and the Japan International Cooperation Agency (JICA) in 2017.

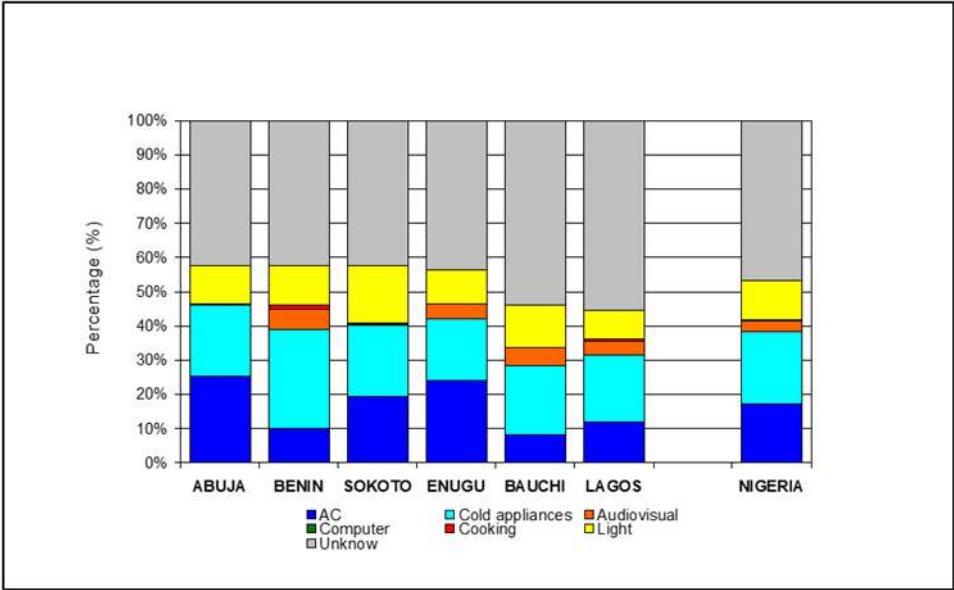


Fig. 1.1 Percentage of electricity consumed by different appliances in residential building in Nigeria  
Source: ECN & GEF-UNDP, 2014

The Nigerian government has expressed commitment to promote the use of energy efficient and climate friendly cooling appliances by developing the Nigerian Cooling Action Plan (N-CAP). The main factors driving this commitment are the insufficient energy generated in the country and the need to meet the climate targets stated in the country’s National Determined Contribution (NDC) submitted to the UNFCCC. The N-CAP is a policy document developed by the Federal Government of Nigeria through the Federal Ministry of Environment and the National Ozone Office, working in partnership with other national stakeholders to address the mitigation of greenhouse gases (GHGs) and Ozone Depleting Substances (ODS) in the refrigeration and air conditioning (RAC) sector of the country. Nigeria is a party to the Paris

Agreement and signatory of the Montreal Protocol (MP) and its subsequent Kigali Amendment. Thus, under the Paris Agreement, Nigeria has an obligation to reach climate targets of achieving net GHG neutrality by 2060.

The N-CAP proposed actions to be taken nationally to reduce GHG and ODS emissions in the RAC sector through the use of coherent policies and strategies. It provides the pathway for the country to lower the indirect and direct emissions in the cooling sector through the implementation and enforcement of energy efficiency policies and regulations and the phasedown of global warming potential (GWP) refrigerants and foam blowing agents. Furthermore, the N-CAP proposed financial schemes, which when implemented will accelerate Nigerians' access to affordable and sustainable cooling appliances (Fig. 1.2).

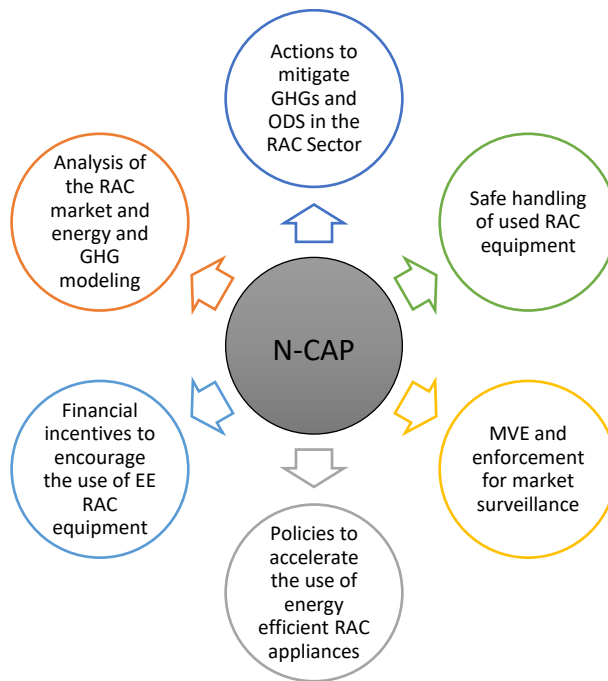


Fig. 1.2: Key elements of the N-CAP

## 1.2 Scope and Objectives of the N-CAP

The N-CAP was developed through a well-orchestrated and systematic process which involves collecting primary and secondary data. The scope of the N-CAP was limited to domestic ACs and residential refrigerators; industrial cooling equipment and automobile ACs are not covered by the N-CAP. Specifically, the objectives of the N-CAP are:

- to provides information on the current state of the market as well as projections of the future energy demand and GHG emissions of the RAC sector,
- to identify key emission reduction and energy-saving potential in the RAC sector,

- to propose recommendations that support the development and implementation of MEPS and labelling scheme for RAC appliances including testing methods and metrics,
- to provide recommendations to support Nigeria’s monitoring, verification, and enforcement (MVE) activities,
- to update Nigeria’s NDC based on the GHG projected emissions and mitigation,
- to provide financial and funding recommendations to support the market transformation towards higher energy efficient appliances and low GWP technologies.

### 1.3 Energy Efficiency Policy Recommendations of the N-CAP

To address the indirect GHG emission from the use of RAC appliances, reduce the overall life cost for consumers and the impact on the electricity grid, the N-CAP proposes the implementation of a mandatory minimum energy performance standards (MEPS) and energy labelling scheme. The Nigeria government first adopted MEPS for refrigerators and air conditioning appliances in the year 2017. The MEPS for air conditioners adopted the use of the Energy Efficiency Ratio (EER) metrics to compare the energy performance of air conditioning appliances. The EER is better when comparing the efficiency of ACs at similar conditions. However, where the ambient conditions change during the day and period of the year, the Season Energy Efficiency Ratio (SEER) metrics will be better to compare the efficiency levels of ACs as it allows laboratory technicians to measure the equipment’s performance at partial capacity. Therefore, the N-CAP has recommended the use of SEER to compare the energy efficiency of ACs with both fixed-speed and variable-speed compressors. It also recommended the use of U4E’s Model Guidelines SEER (CSPF) levels for Nigeria (N-CAP, 2022).

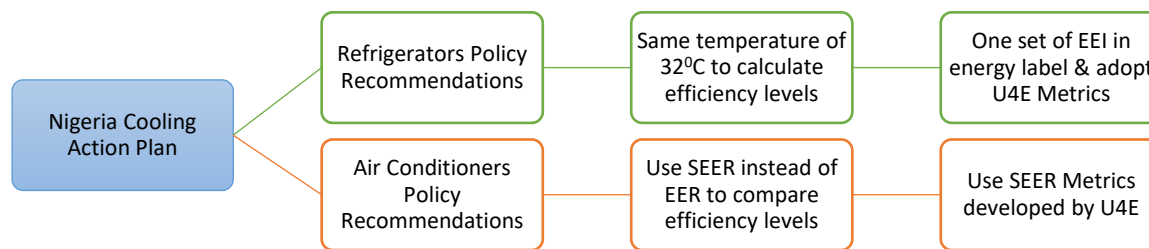


Fig. 1.3: Energy efficiency policy recommendations of the N-CAP

Furthermore, the N-CAP recommended the transition to low GWP refrigerants to mitigate the direct emission from the RAC sectors. It proposed an import ban on used refrigerators and air conditioning appliances as these products often operate with obsolete refrigerant gases that have been banned elsewhere and their performance, safety, and durability are sub-optimal. To accelerate the penetration of energy efficient and climate-friendly equipment, the N-CAP proposes the use of financial instrument, a swap-out program to encourage consumers to replace their old and inefficient devices with new and energy efficient units. As part of the market transformation process, the N-CAP recommended an effective monitoring, verification and enforcement (MVE) process as a tool for market surveillance, which will include product certification and registration, verification tests, and enforcement. One of the

recommendations of the N-CAP is to capture the potentials emission savings from implementing the N-CAP in Nigeria's NDC.

## **1.2 Justification and Objectives of this Report**

The N-CAP as a policy document has proposed several policy recommendations needed to reduce the direct and indirect GHGs emissions associated with the cooling sector. It has recommended the review of the current MEPS for ACs and the adoption of the SEER metrics to define the energy efficiency of ACs instead of the EER metrics. To achieve each of these recommendations will require the engagement of relevant stakeholders as well as engaging in predetermined national procedures. The recommendation to review the ACs regulations can only be achievable by following laid down national policy making process. The process of achieving these recommendations is not discussed in the N-CAP document. Thus, the current document is developed to fill in these gaps.

This document, developed as part of the "Scaling Up Energy-Efficient and Climate-Friendly Cooling in Nigeria's NDC" project, provides the procedures and strategies to achieve the AC energy efficiency policy recommendations proposed in the N-CAP. The project aims to accelerate the transition to energy-efficient and climate-friendly (low-GWP refrigerant) ACs in the country by implementing priority recommendations on energy efficient ACs from the N-CAP, including, "(i) integrate cooling targets in the revised NDC; (ii) implement an awareness campaign to promote energy efficient and climate-friendly ACs; (iii) upgrade the AC minimum energy performance standards (MEPS) and energy labels (iv) recommend protocols and provide training on to enhance monitoring, verification and enforcement (v) provide technical capacity building for technicians to support proper installation of new, energy-efficient, climate-friendly room air-conditioners; and (vi) the development of the present document".

# CHAPTER 2: BENEFITS OF ENERGY EFFICIENCY REGULATIONS

## 2.0 Introduction

Energy efficiency regulations (including energy performance standards and labeling schemes) are viable instruments that are used in many countries to enhance the efficient use of energy. In the cooling sector, they provide the opportunity to improve the energy efficiency of cooling appliances and have the potential to transform the market by gradually removing inefficient products from the market and accelerate the use of energy efficient products. In this section, the benefits of energy efficiency regulation in the cooling sector will be discussed in two broad categories – environmental benefits and economic benefits (Fig 2.1).

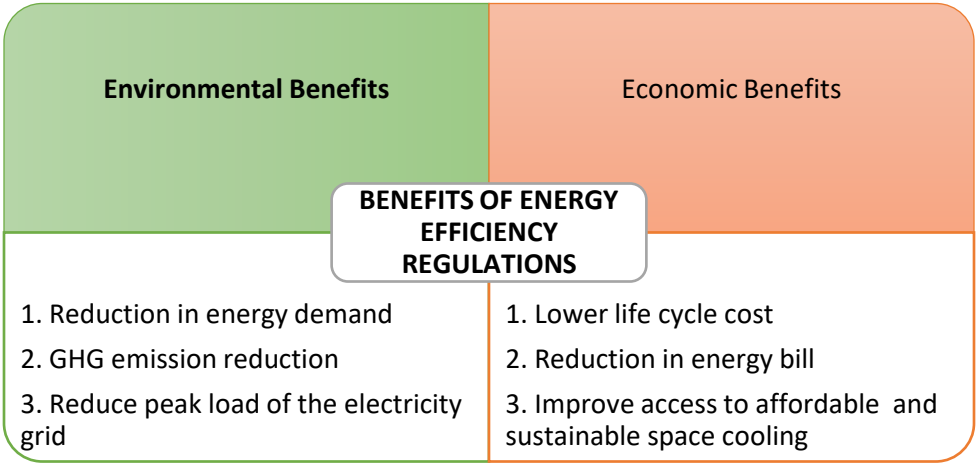


Fig. 2.1: Benefits of energy efficiency regulations

## 2.1 Environmental Benefits

The N-CAP highlighted the environmental benefits of transiting to energy efficient air conditioners with low GWP refrigerants. When MEPS are adopted, the energy efficiency of these appliances will improve. The analysis carried out in the N-CAP revealed that the implementation of the existing MEPS for air conditioners (NIS ECOSTAND 071-2:2017EE) will lead to a 5% reduction in energy demand by 2050. It further shows that adopting stronger MEPS such as the ones proposed in U4E Model Guidelines will lead to energy demand reduction of 24% compared to business as usual. Moreover, the adoption of the current AC MEPS in Nigeria will result in around 3% reduction in GHG emissions. Adopting a stronger MEPS will result in emissions reduction of 38% (equivalent to about 50 MtCO<sub>2</sub>-eq over the 30-year period) as a result of higher energy efficiency and the phase down of high GWP refrigerants (Fig. 2.2).

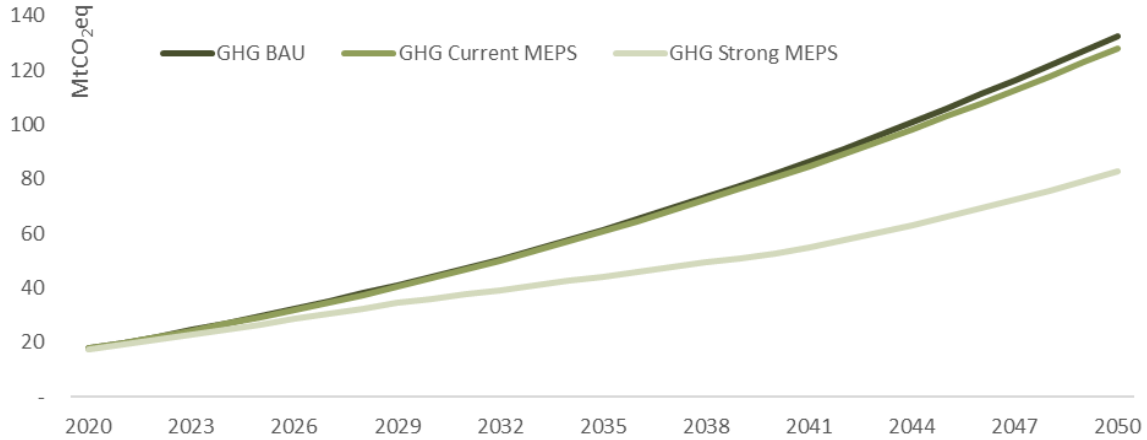


Fig. 2.2: GHG Emissions from the alternative scenarios in MtCO<sub>2</sub>eq (Source: N-CAP, 2022)

## 2.2 Economic Benefits

Using the life cycle cost (LCC) analysis as a basis for quantifying the economic benefits of implementing energy performance standards, the N-CAP vividly shows that transiting to the use of energy efficient equipment will result in lower LCC. The LCC of an appliance is defined as the sum of the cost of appliance and the maintenance cost over the life span of the equipment. The analysis done in the N-CAP shows that for over an estimated 12-year useful lifetime, an air conditioner rated 5-star has the lowest LCC compared to a 1-star air conditioner. As shown in Fig. 2.3, over a 12-year lifetime, the difference between the LCC of a 5-star and 1-star air conditioner is approximately \$1,998 US (N919,080). The difference increases to over \$3000 (N1,380,000) when compared to ACs that do not meet the MEPS.

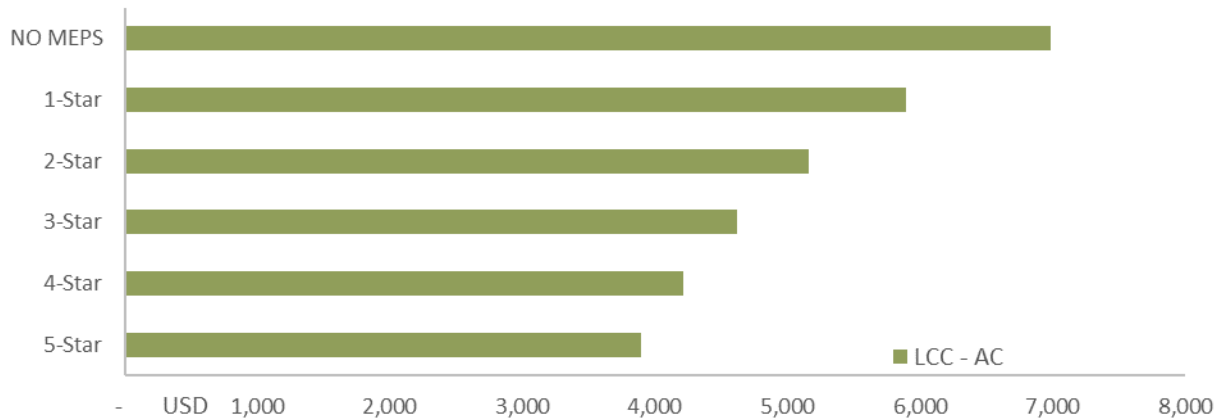


Fig. 2.3: GHG Emissions from the alternative scenarios in MtCO<sub>2</sub>eq (Source: N-CAP, 2022)

A cost saving of about 34% was computed when the LCC of the most efficient level was compared with that of the least efficient level. The air conditioning appliances that do not meet the MEPS regulation use an estimated 610 kWh more of electricity per year compared to a 1-star appliance. The value increased to over 1,830 kWh per year per unit when compared to a 5-star appliance, or 14,640 kWh over the 12-year lifetime, causing emissions of around 8.4 tCO<sub>2</sub>-eq.

## 2.3: Adoption and Enforcement of AC MEPS in Nigeria: Lessons Learnt

The process to develop minimum energy performance standards (MEPS) for appliances began in 2011 when the GEF/UNDP-supported Energy Efficiency Project was inaugurated by the Federal Government through the Energy Commission of Nigeria (ECN). The Energy Efficiency Project was executed by the ECN. The ECN established partnerships with other agencies of government, the private sector and non-governmental organizations to achieve the objectives of the Energy Efficiency Project. One of such partnerships was established with the Standards Organization of Nigeria (SON); the SON is mandated by law to develop and enforce MEPS for electrical appliances.

Through the support of the NESP, the MEPS for refrigerators and air conditioners were approved by the Nigerian government in July 2017 and enforcement of the standards was expected to begin in January 2018. However, the enforcement of AC MEPS encountered some challenges; the manufacturers/assemblers of ACs requested sufficient time to adjust their production processes to accommodate the new standards.

Furthermore, after the MEPS were approved, Nigeria participated in the process to harmonize refrigerator and AC MEPS in the ECOWAS region. The ECOWAS process was concluded, and the harmonized MEPS were approved by ECOWAS Council of Ministers. However, each of the member states was expected to pass the ECOWAS MEPS through their national processes to become national standards. Consequently, the Nigerian government has adopted the ECOWAS AC MEPS and approved as “Nigerian Industrial Standards – Minimum Energy Performance Standards (MEPS) – Part 2: Air Conditioning Products” (NIS ECOSTAND 071-2:2017EE)

Through a stakeholder’s market-oriented survey conducted by the ECN, the government has adopted a 5-Step energy class dial label. The label has a clock-shaped gauge, and the greater efficiency is linked to advancement along the gauge. Thus, the level of efficiency is represented by a clockwise arc (Fig. 2.3) and the number of stars – higher stars represent higher efficiency. By the approved standards, energy labels are required to be placed on appliances before they are sold in the Nigerian market. For air conditioners MEPS, the minimum Energy Efficiency Ratio (EER) is 2.8. The EER for the different energy classes is shown in Fig. 2.4. The MEPS are being implemented as approved, nevertheless the implementation of the energy labelling component was held in view of the harmonization process at ECOWAS regional level. A new version has just been approved by ECOWAS Parliament for the West African region.

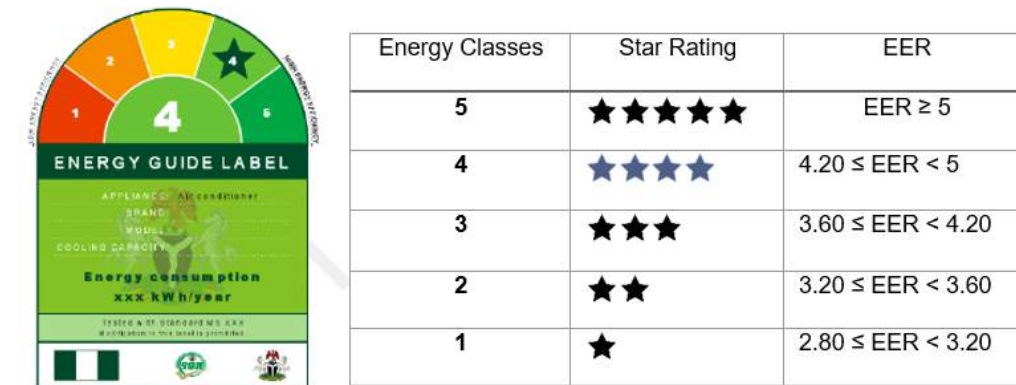


Fig. 2.4: Nigeria energy label and AC MEPS categories

### 2.3.1 Challenges with Implementation of the Nigerian AC MEPS

*Inadequate Awareness:* One of the challenges to the implementation and enforcement of the standards and label scheme for cooling appliances in Nigeria is the inadequate awareness on the newly approved standards among the relevant stakeholders i.e. manufacturers/assemblers and importers.

*Lack of Capacity:* The technical capacity to implement standards and labeling schemes is either inadequate or lacking among the implementing agencies. For example, the SON previously did not have the laboratory equipment to carry out third party verification for air conditioning equipment. This capacity is being strengthened through the intervention of the Nigeria Energy Support Programme funded by the European Union and implemented by GIZ. Through the intervention of the NESP, an air conditioners testing chamber has been procured for the SON.

*ECOWAS Energy Label Harmonization Process:* The process to use the same energy label within the ECOWAS Region was a major challenge to the implementation of MEPS and labelling scheme in Nigeria. While the ECOWAS process was on-going, the SON had suspended the enforcement of labeling in order not to subject manufacturers to frequent adjustment of their production lines as this comes as a huge cost to the manufacturers.

*The Product Authentication Mark (PAM):* The SON is developing a labeling scheme that will cover all appliances sold in Nigeria. The scheme is called the Product Authentication Mark (PAM). The existing energy labeling schemes for refrigeration and air conditioning equipment will be integrated into the PAM Scheme. Again, as this process is still on-going, the enforcement of existing energy labeling scheme was stalled until the PAM scheme is completed.

### 2.3.2 Lessons from Cooling MEPS Implementation

Policy adoption processes are better carried out using a bottom-up approach where relevant stakeholders are adequately consulted and ensured that they are part of the process. This is a stakeholder-driven process with the government playing a coordinating role. This approach has proven to be the best way to develop and adopt policy. Under this approach, stakeholders can begin to adjust their businesses to the proposed policies before they are approved by the authorities. For example, manufacturers that were part of a policy adoption process can begin to adjust their product to conform with the new policy even before it is approved for implementation.

The inability of many countries to enforce standards is in many cases deeply rooted in their lack of or insufficient capacity to enforce those standards. Standards are technology specific, and the enforcement of these standards depends on the ability of the regulatory authorities to understand the underlying technology.

Moreover, the enforcement of standards requires a conformity assessment which entails steps by suppliers and officials to ensure that products adhere to MEPS and labelling requirements before being placed on the market. This assessment consists of testing to determine performance, a declaration of performance, and documenting the assessment (UNEP-U4E 2011). For the purposes of inspection, certification and market surveillance, hardware, that is a certified laboratory or certification bodies are needed. Many developing countries often don't have a laboratory and establish agreements with other



countries, rely on in-house laboratories that are part of the supplier's organization or self-declaration methods, which in some cases may add complexity to the enforcement.

Having a solid compliance mechanism is an indispensable ingredient in the entire standard and labeling scheme. Nigeria has been a victim of the influx of substandard goods despite existing compliance mechanism (UNDP, 2010). As a result, there is need to improve the existing compliance framework in Nigeria for electrical and electronic products. The current system put in place by SON to ensure manufacturers/assemblers and importers of electrical products comply with national regulations can be further improved. For example, SON relies on test results from offshore companies to certify products entering into Nigeria. This compliance process can be further strengthened by encouraging third-party verification, which involves carrying out conformity testing at the port of entering.

In the entire MEPS compliance process, international coordination and synergy with standards authorities in other countries is important. One country in a region may not have all the expertise and equipment needed to implement compliance schemes. In this case, such a country can rely on other countries to carry out their compliance activities. In the ECOWAS region, the process to harmonize cooling appliances MEPS and labeling is on-going. In cases where countries within a particular region (such as ECOWAS) are at different stages of developing standards and labeling scheme, enforcement will be more effective through regional cooperation and coordination. In that case, every country may not necessarily have to spend their resources buying testing equipment; countries within a region can interdepend on one another for their testing needs.

Energy efficiency projects, unlike renewable energy projects where physical infrastructure is installed depend heavily on the use of quality data. For example, there is need to have good record of energy consumption data before any energy efficiency intervention and after the intervention in order to showcase the savings from the intervention. The N-CAP (2022) identifies access to reliable data as a major challenge in the energy efficiency sector in Nigeria. To successfully implement energy efficiency projects and programmes, stakeholders both in the public and private sectors should be encouraged to imbibe the culture of keeping quality data.

# CHAPTER 3: AIR CONDITIONERS MEPS AND ENERGY LABELS: STRATEGY AND IMPLEMENTATION PLAN

## 3.1 Justification to Review Air Conditioners Energy Performance Standards

As mentioned in Section 2.3, the current air conditioner MEPS (NIS ECOSTAND 071-2:2017EE) were approved in 2017. Standards are expected to be reviewed every five years; thus, the air conditioners MEP was due for review in 2022. Furthermore, many countries are moving their energy performance standard to more stringent values such as those proposed in the U4E Model Regulation Guidelines in order to further reduce their energy demands and align with global market and technology trends. Table 3.1 shows the proposed energy efficiency levels for the label in the N-CAP. As shown in Section 2.1, more energy savings will be achieved by adopting more stringent AC MEPS.

Table 3.1: Proposed energy efficiency label using SEER based on the U4E Model Guidelines (Source: N-CAP, 2022)

Energy class	All sizes and types except portable air conditioners	Portable Air Conditioners
<b>5-Star (Most efficient)</b>	SEER $\geq$ 7.40	EER $\geq$ 4.20
<b>4-Star</b>	6.60 $\leq$ SEER < 7.40	3.80 $\leq$ EER < 4.20
<b>3-Star</b>	5.80 $\leq$ SEER < 6.60	3.40 $\leq$ EER < 3.80
<b>2-Star</b>	5.10 $\leq$ SEER < 5.80	3.10 $\leq$ EER < 3.40
<b>1-Star</b>	4.40 $\leq$ SEER < 5.10	2.90 $\leq$ EER < 3.10

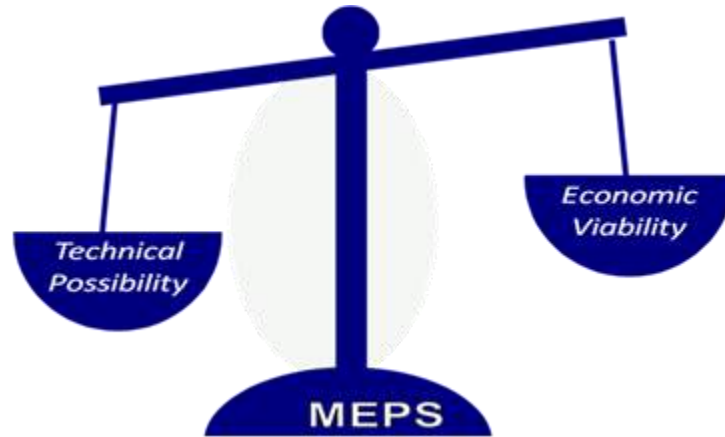
## 3.2 Energy Standard Adoption Process for Air Conditioners

The Standards Organization of Nigeria (SON) was established by Act No. 56 of 1971 and the agency is vested with the responsibility of preparing standards for products and processes and for ensuring compliance with federal government policies on standards, metrology, and quality assurance of both locally manufactured and imported products and services in Nigeria. Moreover, the SON is mandated to establish and maintain laboratories for testing appliances to ensure they conform to stipulated standards. The Standards Organization of Nigeria (SON) is responsible for coordinating the process of developing standards in Nigeria and submitting them to the national standards board for approval. The process of developing energy standards for appliances is a stakeholders-driven process with SON and other relevant agencies playing the coordinating role. The entire process comprises of several activities which are enumerated below.

### 3.2.1 Baseline Data Collection and Analysis

Minimum energy performance standards (MEPS) should be carefully developed in a way that they balance technical possibility with economic viability as well as the competitive forces within a particular market (Fig. 3.1). To achieve this, it is important to x-ray the market by collecting baseline data from the targeted appliance with focus on sales and energy information, which is required to design effective market transformation programs and regulations. In the current context, a market assessment profiling the air

conditioners market will be carried out. The assessment will help stakeholders to understand the energy efficiency level of existing products in the market, which will guide the choice of MEPS values. It will also serve as a benchmark for measuring the impact of the regulation when implementation and enforcement begins.



*Fig. 3.1: MEPS should balance between Technical Possibility & Economic Viability (Source: Uyigüe, 2022)*

Furthermore, once the energy values of existing air conditioners are assessed and analyzed, the impact of replacing the inefficient appliances with more energy efficient ones available on the market will be studied. Specifically, the market assessment of the air conditioner sector will fill the following gaps: the insufficient or lack of information of the formal and informal air conditioner market; lack of detailed information on air conditioning appliance prices and the relationship between prices and efficiency; insufficient information regarding consumer willingness to pay for different air conditioning appliances and appliance features; and the lack of detailed information on air conditioning appliance distribution networks, repair services, and retail sales.

### **3.2.2 Design of Energy Performance Metrics**

Based on the information gathered from the baseline assessment and with the inputs of relevant experts and stakeholders, the values for the MEPS are proposed and articulated as a draft document. The economic analysis from the baseline assessment will form the basis for carrying out the cost-effectiveness analysis, which will eventually help to determine the appropriate level of ambition for the proposed regulatory. In the design of MEPS, and to the greatest extent possible, energy performance test procedures should be harmonized with international protocols such as the International Electrotechnical Commission (IEC) test standards and the International Organization for Standardization (ISO). This should be done to facilitate comparability of product testing as well as reduce barriers to trade among countries. The review of the current air conditioner MEPS will rely on data acquired from the market study to determine energy performance values.

### **3.2.3 Stakeholders Validation**

The next step is to present the proposed MEPS values before national stakeholders. Stakeholders will be invited to comment on the MEPS and to secure political endorsement. This process will be driven by the

SON; the SON will identify the relevant organizations and invite them to participate in the process. The stakeholder’s validation of the draft MEPS is done in a workshop.

### 3.2.4 Working Group Review

Where necessary, the draft MEPS may be subjected to working group review. A working group comprises of stakeholders sharing similar areas of interest. For example, the manufacturers, importers, distributors, and retailers of air conditioning equipment may be organized to form one working group (Fig. 3.2), while end-users, community-based organizations and NGOs can form another working group. This allows stakeholders belonging to the working groups to critically review the draft regulation and coordinate their comments and inputs. The working groups review is solely coordinated by the SON.

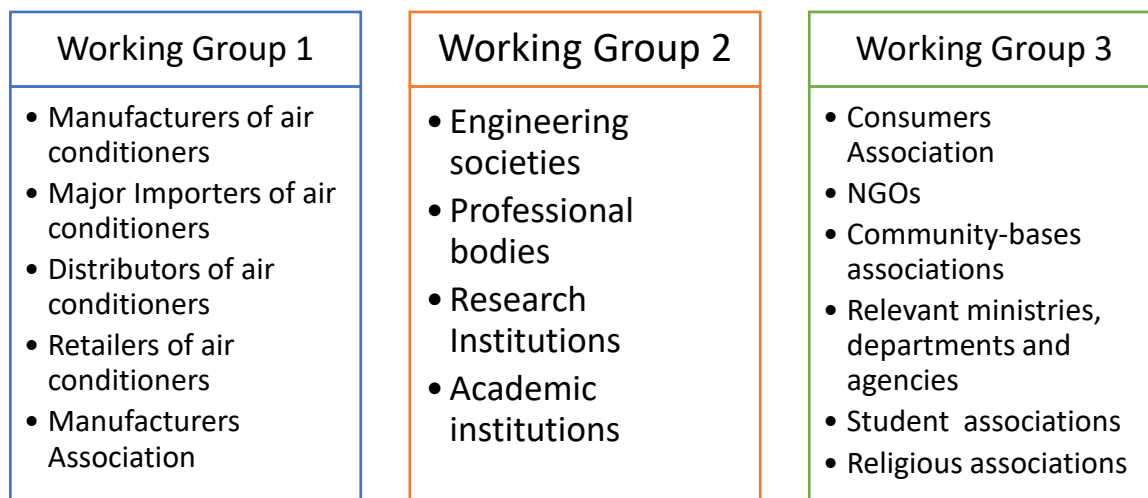


Fig. 3.2: Proposed working group for the review of AC MEPS

### 3.2.5 Technical Committee Meeting

In accordance with the standard making process in Nigeria, the draft standard will undergo review by SON-inaugurated Technical Committee (TC). The primary members of the TC are members of the Nigeria National Committee of IEC (International Electrotechnical Commission). Other members of the TC are carefully selected by the SON, and they are stakeholders relevant to the standard under review. The overall objective of the Technical Committee is to review the draft standard and make recommendations to the SON Standards Council for approval. The TC will carry out an in-depth review of the standard and make their recommendations.

### 3.2.6 SON Council Approval

After the review by the Technical Committee, the document is sent to the SON Standards Council to get political approval. The draft standard becomes a national working document at the approval of the SON Standards Council. It undergoes editorial within the SON, and it is published as a gazette.

### 3.2.8 Awareness Creation

The content of the new standard is expected to be communicated to stakeholders, especially industry stakeholders. This could be done through a workshop organized by SON or through media outlets.

## 3.3 Review of Air Conditioner MEPS: Implementation Plan and Timeline

The N-CAP has proposed the need to review the current MEPS and raise the value higher than what it is now. The current MEPS for ACs has defined a minimum EER of 2.8. The process to review the existing MEPS is similar to the process of developing a new energy standard as described in the section above. This section will outline the implementation plan to review the existing AC MEPS (Table 3.2).

Table 3.2: Implementation plan for the review of AC MEPS

Activities	Responsible Parties	Description of Roles	Timeline
<b>Baseline Data Collection and Analysis</b>	ECN, NCS, SON, NBS, UNEP, DCC, NOO, NCCC	The ECN will coordinate the baseline data collection with technical assistance from UNEP. NCS, SON, NBS, DCC and NOO will complement the effort by making available the data required for the analysis. The output from the activity will be the draft report of the baseline study	Q2 to Q3 of 2023
<b>Design of Energy Performance Metrics</b>	SON, ECN, UNEP	With the analysis from the baseline study, the SON working with the ECN with technical inputs from UNEP will define the MEPS levels. The output from this activity will be the draft MEPS	Q3 of 2023
<b>Stakeholders Validation</b>	ECN, SON, UNEP	The first presentation of the draft MEPS will be done in national stakeholders' workshop that will be jointly organized by the ECN and SON. This will be supported by UNEP and CCC.	Q4 of 2023
<b>Working Group Review</b>	SON, ECN, UNEP	Where necessary, the draft MEPS will be sent to different working groups (Fig. 3.3) for their inputs. This will be coordinated by the SON with support from ECN, UNEP and CCC	Q1 of 2024
<b>Technical Committee Meeting</b>	SON	SON will inaugurate the Technical Committee that will review the draft MEPS before they are sent to the SON Council for political endorsement.	Q1 of 2024
<b>SON Council Approval</b>	SON	After the review by the TC, the document will be sent to SON Council for approval.	Q2 of 2024
<b>Awareness Creation</b>	SON, ECN, UNEP	The content of the new MEPS will be communicated to stakeholders through a workshop that will be jointly organized by SON and ECN	Q3 of 2024

# CHAPTER 4: STRENGTHENING THE COMPLIANCE PROGRAMME FOR AC MEPS AND LABELS

## 4.1 Compliance Framework for Standard and Label Program and the Limitations

According to U4E (2021), “A conformity assessment includes steps by suppliers and officials to ensure that products adhere to MEPS and labelling requirements before being placed on the market. It includes testing to determine performance, a declaration of performance, and documenting the assessment” In order to propose an effective compliance framework for the implementation of energy standards and labeling scheme for air conditioners, it is important to look critically at the existing conformity assessment framework. The conformity assessment framework in Nigeria is divided into two main categories – Standards Organization of Nigeria Conformity Assessment Programme (SONCAP) for imported products and the Mandatory Conformity Assessment Programme (MANCAP) for locally manufactured/assembled products. Both SONCAP and MANCAP were established by the Standards Organization of Nigeria (SON).

### 4.1.1 Standards Organization of Nigeria Conformity Assessment Programme

SONCAP is designed for products that are imported into Nigeria. It is an offshore certification system that enable products to undergo testing and certification in accordance with Nigerian standards before they are imported into the country. The SON has identified some global firms know as International Accredited Firm (IAF). The IAFs are authorized by the Nigerian government to conduct laboratory test on products intended for the Nigerian market. These IAFs may have global coverage and may have laboratories of their own or rely on other accredited laboratories to carry out appliance testing. Importers intending to bring products into Nigeria are expected to send their products to any of these IAFs, to conduct the test on the products and send the test results directly to the SON. Based on the test result from the IAFs, SON will then issue the SONCAP certificate if the product complies with national standards. When the products arrive at the port of entry, the Nigerian Custom Service (NCS) requires the SONCAP certificate as a requirement (clearing document) before products are allowed into the country (Fig 4.1).

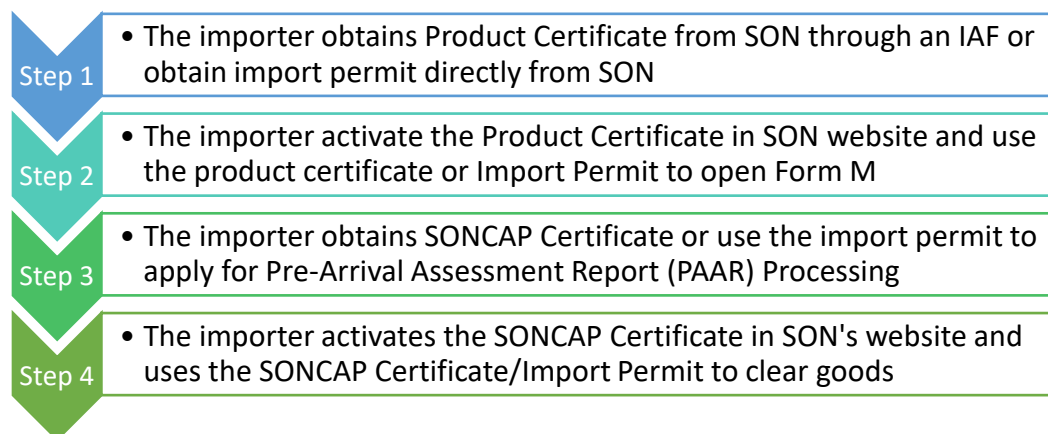


Fig. 4.1: Steps to Obtain the SONCAP Certification

Form M is a mandatory documentation process put in place by the Federal Government of Nigeria through the Federal Ministry of Finance (FMF) and the Central Bank of Nigeria (CBN), to monitor goods that are imported into the country as well as enable collection of import duties where applicable (Cotecna, 2015).

### 4.1.2 Mandatory Conformity Assessment Programme

MANCAP was designed for products that are manufactured locally. MANCAP is a mandatory product certification scheme put in place by SON in 2006 to ensure that all locally manufactured products conform to the relevant standard before they are presented for sale in the market or exported. The Product Certification Department (PCD) of the SON is responsible for carrying out this statutory function and issuing the MANCAP Certificate. The MANCAP certification is valid for 3 years. The fee (service charge) charged by SON to acquire the MANCAP certificate depends on the size of the factory (Table 4.1).

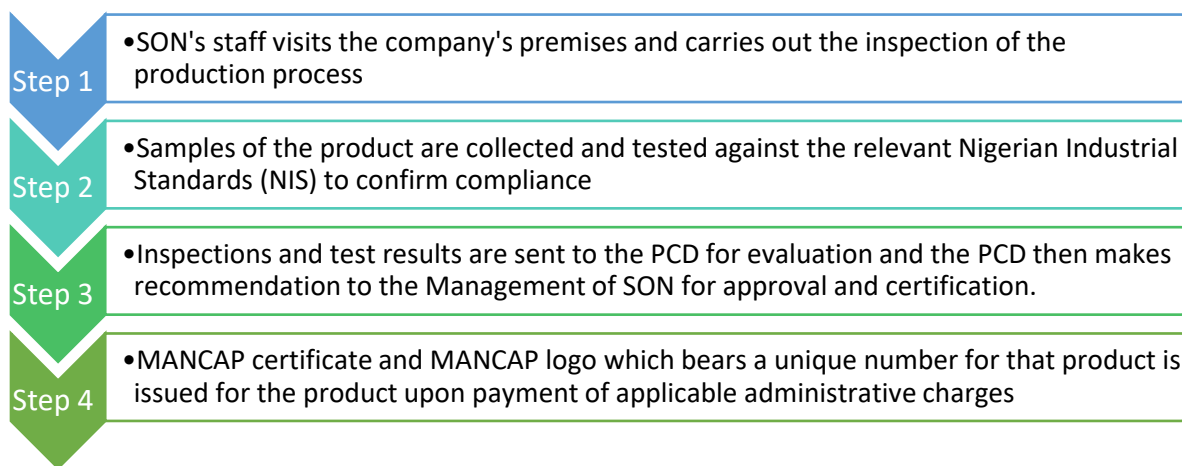


Figure 4.2: The process for obtaining MANCAP Certification

### 4.1.3 Complementary Activities to Compliance Schemes

**Product Registration<sup>1</sup>:** Products entering Nigeria are registered with the SON. Also, those manufactured locally are registered with SON. This is one of SON's hemes of SON that allows the agency to trace and safeguard against the influx of substandard products. New products are expected to be registered with SON before entering the market. The registration process entails subjecting the product to the required test procedures and if the results conform to national standards, the product is then certified by the SON.

**Interagency Collaboration in Conformity Assessment:** The Nigeria Customs Service (NCS) plays a vital role in the conformity assessment schemes. The NCS operates an online platform called the Nigeria Integrated Custom Information System (NICIS)<sup>2</sup>. The SON is given access to this platform. The NICIS facilitates the conformity assessment process. The NCS will require conformity certificate (SONCAP) issued by the SON to give approval for any product. SON sends the conformity certificate directly to NCS. Under the law, the SON is expected to carry out physical inspection of goods at the port of entry as part of the approval process.

<sup>1</sup> More info can be consulted here: <https://united4efficiency.org/product-registration-systems/>

<sup>2</sup> The platform ca be accessed here: <https://customs.gov.ng/>

*Surveillance and Third-party verification:* Third party verification testing is a statutory and regulatory duty of the SON. This is carried out for products that are already on the market<sup>3</sup>. The number of samples required to carry out test as stated in the standard for that product. The SON has offices in the 36 states of Nigeria including the Federal Capital Territory<sup>4</sup> and surveillance activities are carried out regularly in these offices. Surveillance is done manually and randomly. Moreover, they also purchase products from shops and take them to the laboratory for tests. In cases where they receive information from the public on potential substandard products, they are empowered by law to seal up the shop or warehouse to enable them conduct tests to assess compliance with national standards.

#### **4.1.4 Penalty for Non-Compliance**

The penalties for non-compliance for approved standards are defined in the Law establishing the SON, and the fate of defaulters is decided by a court of competent jurisdiction. The penalties ranged from prosecution, payment of fine to destruction of affected goods. In some cases, the defaulting manufacturer or importer may be asked to correct the defect in the product.

#### **4.1.5 Limitations to the Compliance Schemes**

Despite the measures put in place by the authorities, substandard products still find their way into the country. UNDP (2010) has identified the proliferation of substandard products as one of the barriers to transforming the market into the use of more energy efficient products. This is an indication that there may be pending limitations to the current compliance framework. The complete lack of verification testing poses a limitation to the current compliance framework. As a result of this, some importers have device means of making some of their product to avoid certification by the IAFs. During consultation with stakeholders, it was revealed that some importers send products that comply with Nigeria standards to the IAFs and the products they bring into the country are different in specification from those that were presented for testing.

The current system also lacked the operational Product Registration System (PRS) with end-users' interface. U4E (2021) has asserted that the establishment of a PRS is good practice to enhance conformity and provide a first point of control. A PRS requires suppliers to enter product information into a particular database prior to it entering the market. This system allows the designated national authority to check the declaration and supporting documents provided by the supplier. If they conform with national standards, they can then grant permission for the product to enter the market. The PRS ensure that there is third-party assessment of the technical documents provided by the supplier.

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<sup>3</sup> More info here: <https://son.gov.ng/inspectorate-compliance-monitoring/>

<sup>4</sup> More info here: <https://son.gov.ng/branch-locator/>



## 4.2 Proposed Compliance Framework for AC Energy Standards

Table 4.1: Proposed compliance schemes for air conditioner MEPS

Compliance Schemes	Descriptions	Policy/Regulatory Requirements	Responsible Parties and Roles
<b>Conformity Assessment Programme</b>	SON is encouraged to strengthen the SONCAP and MANCAP Programme described in Sections 4.1.1 and 4.1.2 above for AC compliance. A clear and actionable ACs conformity assessment procedure shall be developed with step-by-step instructions for suppliers.	This can be enforced under the Act establishing the SON. No new policy or regulation will be required	SON being the agency anchoring the SONCAP and MANCAP schemes will require the NCS to fully enforce these compliance schemes
<b>Verification Testing at the Port of Entry</b>	Beyond the use of accredited IAFs to certify imported appliances, verification testing at the point of entry is inevitable. Recently, SON lacked the technical capacity to carry out verification testing for ACs, as an AC Testing Calorimetry Chamber is required. Supported by the EU-GIZ Energy Support Programme, the equipment has been procured, installed and commissioned.	No new regulation or policy will be required for enforcement as SON is already mandated by the Act establishing it.	SON is responsible for in-country verification testing, in collaborating with the NCS as all goods imported into the country will go through the NCS.
<b>Product Database</b>	The use of Product Database with end-users' interface can further strengthen the compliance process for ACs. It can provide a real-time record of tested and certified ACs available in the market. It could take data from basic lists of compliant or certified ACs used by the authorities. A searchable database, accessible by consumers online or via smartphone applications.	A new regulation may be required to implement this scheme	SON should host the database with support from the other data-oriented agencies such as the NCS, NBS, and ECN
<b>Surveillance</b>	Surveillance will remain relevant in the entire compliance process. This is described in Section 4.1.3 above.	No new regulation is required	SON could synergize with other organizations e.g. ECN, NBS, NCCC
<b>Product Registration System</b>	Product Registration system should be introduced into the current conformity assessment framework. As described in Section 4.1.5, it will ensure third-party assessment of product documentation. The existing product registration system could be modified to collect important parameters such as the EER, SEER, energy consumption etc.	No new regulation is required as the law establishing the SON supports this initiative	SON

## CHAPTER 5: POLICIES AND INITIATIVES TO STRENGTHEN AIR CONDITIONER MEPS IMPLEMENTATION

### 5.1 Integrating Energy Efficiency into Government Procurement Process

The government (federal, state and local government) is one of the largest single users of air conditioners in the country. Government buildings relied mainly on ACs for ventilation and space cooling. In a study conducted by the ECN with support from Japanese International Cooperation Agency (JICA), it was revealed that space cooling consumes about 60% of the energy in public buildings. The government can lead by example by procuring energy efficient and climate friendly ACs. The Bureau Public Procurement (BPP) is the government agency that is mandated to regulate the way and places government properties are procured. BPP is responsible for defining the guidelines on the procurement of government properties. The BPP is saddled with the capacity to influence and encourage government departments to procure more sustainable appliances through their tendering system.

Table 5.1 below succinctly describes the step to be taken to integrate the procurement of energy efficient and climate-friendly air conditioning appliances into government procurement processes.

*Table 5.1: Steps to mainstream energy efficient ACs into government procurement process*

Steps	Activity	Description	Responsible Party
<b>Step 1</b>	Review of government procurement policy, guidelines, and processes	The first step is to review existing government procurement policy, guidelines, processes especially the procurement of electrical appliances and specifically the procurement of ACs. The review will help to identify any gap in procurement policy as it relates to the energy performance of electrical appliances and the contained refrigerant. It will also help to guide the policy recommendation that will mainstream energy efficiency into the procurement policy and process for AC	ECN, UNEP
<b>Step 2</b>	Prepare policy brief to be shared with agencies relevant to the procurement processes	With the information gathered from the review, a one-page policy brief will be prepared and shared with agencies relevant to government procurement process, especially the BPP. Among others, the policy brief will itemize government policy to promote energy efficiency as stipulated in the National Renewable Energy and Energy Efficiency Policy (2015) and the National Energy Policy (2022). The policy brief will define the MEPS metrics for ACs in accordance with National Industrial Standards and the	ECN, SON, UNEP

		minimum requirement for government procurement.	
<b>Step 3</b>	Consultation meeting with agencies relevant to government procurement process	Under the leadership and coordination of the ECN, the relevant agencies will be visited to further discuss with them the need to mainstream energy efficiency into the procurement of electrical appliances and to share with the policy brief. This will create the platform to clarify any issue in the policy brief and other issues relating to AC MEPS.	ECN, NCS, FME, UNEP, NCCC

## 5.2 Financial Schemes to Accelerate the Use of Energy Efficient Air Conditioners

The N-CAP proposes the use of financial schemes to accelerate the adoption of energy efficient cooling appliances. It specifically proposed a Swap-out Programme to help increase the penetration of energy-efficient air conditioning equipment. This is a voluntary programme where end-users can swap their old and inefficient appliances for a new and efficient one. The programme is a replacement scheme that applies direct cash rebate to end-users and at the same time ensures that old appliances undergo environmentally sound decommissioning and recycling. End-users who volunteer to turn in their old functioning ACs are given a discount on the purchase of new and efficient ACs.

This form of scheme will require leadership from the government and will involve public concessionary financing. The scheme should be coordinated by a designated government entity with appropriate policy or regulation to support its implementation. The scheme could be anchored on existing policy or regulation and where non exist, the authorities can put in place the policy to guide the implementation. Partnership with the private sector is key to the implementation of the AC Swap-out Scheme. Table 5.2 shows the key activities proposed to implement the AC Swap-out Scheme.

Table 5.2: Activities to implement the AC Swap-out Scheme

Activities	Description	Responsible Party
<b>Policy Mapping</b>	The first step in the implementation of AC Swap-out Scheme is to conduct a policy mapping to identify any existing policy or regulation to anchor the Swap-out Scheme. It is important that initiatives that involve the finances of end-users and other stakeholders be back up legally.	ECN, UNEP
<b>Identification of Government Coordinating Entity</b>	Every fiscal scheme should have an entity that will be responsible for the overall coordination of its activities. In this case, it is recommended that the coordinating entity should be a public institution. One of the outcomes of the policy mapping is to identify the government entity that will coordinate the activities of the scheme. The identified entity	ECN, UNEP

	should have the legal mandate to implement the Swap-out Scheme.	
<b>Identify the Private Sector Partners</b>	As stated earlier, the model for implementing the Swap-out Scheme is the public private partnership (PPP). Three categories of private sector actors are needed in this scheme; they include the fund managers (one or more of the commercial banks), registered waste companies and retail outlets. The Waste Manager will be responsible for collecting and transporting the old and inefficient ACs to the treatment center. The retail outlets will take back the old ACs and deliver the new and efficient ACs to end-users. The private sector actor may be selected through a competitive bidding process.	ECN, NOO, DCC, UNEP, NCCC
<b>Defining the Rules of the Swap-out Scheme</b>	To minimize abuse and to ensure that the objectives of the Swap-Out Scheme are achieved, it is pertinent to define the rules. The major targets of any fiscal scheme are the low- and medium-income earners. The rules will ensure that the process is not taken over by the rich and influential Nigerians. The rules will also ensure that the right kind of ACs are swapped for more efficient ones. Among others, the Swap-out Scheme should ensure that: <ul style="list-style-type: none"> <li>• Air conditioners used for the scheme should be 4-Star or 5-Star according to the current national standards,</li> <li>• The AC should mandatorily make use of low GWP refrigerant such as R290 or R32.</li> <li>• Old functional ACs with minimum age of 10 years are handed over to vendors and replaced by new and efficient ones.</li> </ul>	ECN, NOO, UNEP
<b>Identifying Funding Sources for Swap-out Scheme</b>	The Swap-out Scheme will require some funding from government and other donor agencies. These streams of public fund must be mixed with private sector fund to achieve the objectives of the Scheme. Government funds can come from a few sources; it could come from appropriation in the national budget or from energy and environment related taxes. Funding for the scheme could also be sourced from international donors such as the Global Environment Facility (GEF), Green Climate Fund (GCF), African Development Bank (AfDB) etc.	ECN, NOO, UNEP, NCCC

## 5.3 Abating Greenhouse gas Emissions from Obsolete RAC Equipment in West Africa Project

The Government of Nigeria through the Federal Ministry of Environment's NOO and the ECN is partnering with UNDP's Montreal Protocol Unit and UNEP's [United for Efficiency](#) to implement the Project - Abating Greenhouse gas Emissions from Obsolete RAC Equipment in West Africa (AGORA). The project will be funded by [The French Facility for Global Environment](#) (FFEM)

The AGORA project aims to jointly protect the ozone layer, directly and indirectly reduce greenhouse gas emissions in Ghana and Nigeria in the cooling sector (RAC), and to create a market transformation engine in the RAC sector in Africa towards low global warming technologies. It has three specific objectives:

- Establish or strengthen policy, regulation and partnerships to ensure the success of RAC equipment replacement schemes that result in the avoidance of GHG emissions at the end of the equipment's life in a circular fashion.
- Transforming the RAC market through ambitious replacement programmes, creating a fleet of energy efficient domestic equipment using low GWP refrigerants
- Initiate market transformation in the air conditioning sector in Africa, by promoting certain new technology developments (notably R290-based domestic air conditioning) that are still not widely used despite their maturity.

The project is expected to begin in 2023 and will support the implementation of additional key recommendations for the N-CAP.

## 5.4 Awareness Creation

The success of any energy efficiency initiative depends on how people accept and understand the concept as much as or even more than the technology involved in the initiative. To maximize the benefits of minimum energy performance standards (MEPS) and labels, efforts must be made to create awareness on their principles and importance among all stakeholders, including major ACs suppliers and distributors, manufacturers, policy makers as well as the end-users through a well-articulated Energy Efficiency Awareness Program.

The essence of MEPS and labeling scheme is to change human behavior tilting it towards the minimal use of energy. A good understanding of MEPS and the content of labels among stakeholders will go a long way to change the behavior of stakeholders. Thus, it is important for stakeholders to fully appreciate the importance of energy efficiency. One of the ways to do this is to communicate the benefits of energy efficiency, minimum energy performance standards and labels to consumers and other stakeholders through cost effective and relevant communication channels. Awareness creation could be done through specialized media channels and non-media channels.

### 5.3.1 Media Channels

Increased media engagement is achieved by fostering, managing and sustaining partnership with the local media companies and associations (print, electronic or web-based) through relevant programs. Media organizations can help create news, stories and ensure that the required information reach a wider audience. Media trips and visits to the energy efficiency project sites, and interactions with the local communities and project implementing partners should be organized to disseminate the impacts of MEPS and labels.

Table 5.3: Proposed media channels to communicate Project outcomes.

<b>Print Media</b>	<b>Newspaper</b>	Newspaper publications emanating from events under the Project, creative stories, and opinion pieces could be published in any of the newspaper companies such as Leadership Newspaper, Guardian Newspaper, Daily Trust Newspaper, The Punch Newspaper. This Day Newspapers and others)
	<b>Magazines</b>	Information on Project outcomes and other information to promote the use of energy efficient air conditioners could be published in magazines of media organizations and the periodicals of media units in government institutions
	<b>Newsletters/Bulletins</b>	This could include periodic newsletters from the media units of implementing partners of the Project
	<b>Billboard</b>	There is need to partner with media companies doing the business of using billboards for communication.
<b>Electronic Media</b>	<b>Radio</b>	The use of radio jingles, LPMs, interviews, call-in programmes, promotional programmes, specialized segments, news features etc. are potential way to create awareness
	<b>Television</b>	Television programmes such as LPMs, interviews, specialized programmes in partnership with like-minded organizations such as National Orientation Agency (NOA), Environment Watch of the Federal Ministry of Environment), sponsorships programmes, sale promotions, news features, etc. can help to reach wider audience
<b>Digital/Online Media</b>	<b>Website/Social Media</b>	Digital media and online platforms such as websites, online portals, social media outlets - YouTube, Facebook and other vibrant digital platforms, email blasts (videos, short skits) could be explored to reach online audience.

### 5.3.2 Non-Media Channels

Awareness creation could also be carried out through non-media channels such as conferences, workshops, town hall meetings, consultation meetings, etc. It is equally important to make use of social media channels to upload appropriate contents for raising awareness and garnering support from various stakeholders and partners. The non-media communication medium and channels that can be adopted for effective awareness campaigns include but are not limited to the following as enumerated in Table 5.3 below.

Table 5.4: Non-media channels to create awareness

<b>Conferences and Workshops</b>	Social events with mass gathering such as workshops, conferences, religious gathering are appropriate places to reach out to many people at a time.
<b>Promotional Items</b>	Promotional items such as T-shirts, coffee mugs, hats etc. with messages inscribed on them can serve as awareness creation materials.
<b>Printed Materials</b>	These include newsletters, memos, pamphlets/brochures, flyers, official bulletins, posters, banners, etc.
<b>Direct Mail</b>	Special letters could be prepared and sent as direct mails from project partners (ECN, SON, UNEP) to selected audience in the public sector as a way of creating awareness.
<b>Internet-based Products</b>	These may include but not limited to the following news tickers, project's homepage, e-newsletter, e-mail, partners' intranet, blogs, social media outlets such as Facebook, Youtube and Twitter
<b>National Flagship Events</b>	Participation in national events such as Science, Technology and Innovation (STI) Annual Expos and Exhibition, workshops, conferences and trade fairs etc. is a potential communication channel for energy efficiency activities.
<b>Announcement Vans</b>	Announcement vans could be deployed to parade various communalities at given times broadcasting in various languages other than English.
<b>Personalities and Influencers</b>	Politicians, religious leaders, musicians, movie stars, radio and television hosts, social media influencers, health professionals, economists, chiefs, teachers, local champions can help to create awareness
<b>School Campaigns</b>	In the spirit of catch-them-young, campaigns may be organized for selected schools and technical colleges.
<b>Outdoor Gatherings</b>	Outdoor gatherings such as parties, events, funerals, sports, religious activities, family celebrations etc. could serve as communication channels.
<b>Market and Mall Raids</b>	Announcement vans with giant screens displaying required information packaged into convincing audio-visual materials can help to pass information to targeted audience.
<b>Sales Outlets, Parks, and Station</b>	Sales outlets, airports, train stations and bus stops are strategic places to reach out to many people at a time.
<b>Traffic Raids</b>	Other awareness creation channels are sharing of flyers and giveaways randomly in traffic
<b>Mobile Content</b>	The use of bulk SMS broadcast, bulk influencer audio broadcast on SMS, could be explored to reach out to target audience.

### **5.3.3: Stakeholders Mapping**

For an awareness campaign to be effective, it is important to confirm who the target audience is, because messages and delivery mechanisms will differ according to the intended audience. It is equally important to recognize and consider the varying circumstances, needs and concerns that each group of stakeholders may have since Minimum Energy Performance Standards and labels are targeting different groups. Clearly defined audiences allow us to develop effective messages, activities and plans that will address the needs of each group. Stakeholder mapping should include stakeholders across the spectrum, that is, government, private sector players, RAC's business associations, etc.

## **5.5 Capacity Development Needs**

The success of implementing and enforcing any regulation will depend on many factors. One of these factors will be to strengthen competencies in the capacity and capability of the relevant agencies of government and other stakeholders to effectively implement and enforce new regulations. The implementation of AC MEPS and label initiative will require building the capacity of two categories of stakeholders as follows:

- Enhance the technical capacity of the relevant agencies of government to enforce standard and labeling schemes for air conditioners.
- Enhance the capabilities of technicians to properly size and install air conditioners in accordance with global standards and best practices.



Table 5.5: Capacity need for monitoring, verification and enforcement of AC MEPS

Stakeholder	Capacity Needs	Responsible Party	Proposed Funding Sources
<b>Standards Organization of Nigeria (SON)</b>	<p>To implement and enforce AC MEPS and labeling scheme, the SON will require the following capacity:</p> <ol style="list-style-type: none"> <li>1. Training on the importance and benefits of energy efficiency and implementing AC MEPS. This training will provide in detail the environmental and economic benefits of implementing MEPS.</li> <li>2. SON will require the laboratory facilities to test the energy efficiency level of ACs. Furthermore, SON staff will require training in the operation of these facilities.</li> <li>3. Training on monitoring, verification and enforcement (MVE) and carrying out surveillance in the AC sector</li> <li>4. Training on refrigerant identification and storage</li> </ol>	ECN, NOO with support from UNEP, GIZ and other partners	Budgetary allocation, GEF
<b>Nigeria Customs Service (NCS)</b>	<p>The Nigeria Customs Service (NCS) is responsible for policing the Nigerian border to ensure that only appliances that conform with national standards are allowed into the country. The NCS will require training as follows:</p> <ol style="list-style-type: none"> <li>1. NCS will require training on the fundamental principal of energy efficiency and the benefits and impacts of MEPS and labelling schemes</li> <li>2. Training on refrigerant identification</li> </ol>	ECN, NOO with support by UNDP, UNEP and other partners	Budgetary allocation, GEF
<b>National Environmental Standards and Regulation Enforcement Agency (NESREA)</b>	NESREA is mandated to carry out enforcement of environmental standards, regulations, rules, laws, policies and guidelines. NESREA will require training on refrigerant identification to enforce government policy on the use of refrigerants.		Budgetary allocation, GEF
<b>Suppliers, Manufacturers and Vendors</b>	<ol style="list-style-type: none"> <li>1. Basic knowledge of energy efficiency and the benefits to national development</li> <li>2. The roles of MEPS in the meeting the country's target in the NDC</li> <li>3. Overview of national regulations aim at reducing direct and indirect emission from the RAC sector</li> </ol>		Budgetary allocation

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