Transforming the Cookstoves Market through Standards & Labels in Nigeria

October 2017

Executive Summary

The private sector, the government of Nigeria, and local and international NGOs, including the Nigeria Alliance for Clean Cookstoves and the Global Alliance for Clean Cookstoves, seek to transition Nigerian households to cleaner and more efficient stoves and fuels to improve health and reduce environmental impacts. This transition, in part, will be enabled through the implementation of standards and labeling (S&L) policies and programs. Well-designed standard programs transform markets by removing poor-performing or low-quality products, while labeling programs encourage and empower consumers and other buyers to make informed decisions about the products they purchase. S&L policies and programs exist in a variety of types, often enable complementary market transformation projects, and can be adapted to most cultures, countries, and markets. The primary principles of S&L include:

- **Testing products** to better understand their performance and to improve confidence among consumers and investors.
- **Establishing performance criteria** for efficiency, emissions, and safety to set a benchmark for manufacturers to meet, based on comprehensive market data; and
- **Conveying information** to producers, consumers, distributors, retailers, and program implementers through labels and public awareness campaigns, to increase awareness of the benefits of clean and efficient cookstoves.

The specific components of an S&L policy or program, such as type (e.g. voluntary vs mandatory), scope (i.e. what products are included), metrics (i.e. what the product is being tested an assessed on), label type, and compliance scheme (aka monitoring, verification and enforcement) that will be most beneficial to a market are based on that market's technology landscape, policy environment, actors, and consumers.

The status of the cookstoves market in Nigeria indicates that S&L policies and programs can support the goal of substantially increasing consumer uptake of cleaner and more efficient cookstoves (also referred to as improved cookstoves, or ICS).

The following key findings were gathered from conversations with local cookstove stakeholders, and influence the approach to devising and implementing a cookstove S&L strategy in Nigeria:

- The ICS market is immature but growing
- The Nigerian government is motivated to engage in the cookstoves policymaking process and political will exists at multiple levels
- Existing frameworks for S&L programs are in place
- Draft standards exist, but further effort is needed to revise, approve and implement them

- All stakeholders can benefit from improved accuracy and reduced costs of testing
- Government needs more market and product performance information
- Standard Organization of Nigeria is mandated to carry out MV&E, but resources are limited
- Industry's attitudes towards S&L programs are diverse; Some manufacturers were supportive of S&L programs whereas some others were concerned with addition regulation and costs;
- Prices of ICS are high compared to traditional stoves, partly due to the high tax and tariffs
- NACC and ICEED are the key NGO actors in the Nigerian ICS scene

The above-mentioned features show that the market and sociopolitical framework is ready to implement an S&L program in Nigeria, however, there are still challenges that might impact effective and successful implementation. Therefore, based on these features present in Nigeria's cookstoves market, and best practices from other appliance S&L programs in markets that share some of them, CLASP has proposed a series of recommendations.

1. Cookstove S&L programs in Nigeria should be designed to be: **Voluntary** and **Technology-neutral.**
2. Policy makers may also consider **aligning cookstove S&L programs with existing S&L programs** (i.e. refrigerators and ACs), and;
3. Use an **integrated labeling approach** which consists of a categorical component for thermal efficiency and an endorsement component for emission.
4. An Inter-Ministerial Steering Committee, led by the Federal Ministry of Environment and Federal Ministry of Health, could be established to provide high-level political support, and to drive cookstove S&L program in Nigeria.
5. SON could take the lead in developing and implementing the cookstove S&L program, with guidance from the Inter-Ministerial Steering Committee and technical support from the cookstove Technical Committee.
6. A tax incentive program could be considered in order motivate manufacturers to participate in the voluntary S&L program and lower retail prices of improved cookstoves in Nigeria.

1. Introduction

Nigeria is the largest economy and the most populated country in Africa with over 182 million[1] people or 36 million households[2] distributed equally in urban and rural areas.[3] The majority of Nigerian households still cook with traditional inefficient stoves and fuels, which cause severe climate and health problems for the country. Biomass fuels, including both wood and charcoal, are the most common fuels used in Nigeria. Seventy-three percent of households in Nigeria are reported to cook with solid fuels.[4]

With less than 1% modern fuel penetration in Nigeria, traditional cooking practices have led to significant health damage due to indoor air pollution. It is estimated that solid fuel use resulted in over 79,000 total deaths and 3.8% of national burden of disease in 2002.[5]

From a climate change and environmental protection perspective, forest degradation is a significant challenge in Nigeria, and reliance on biomass as fuel is a contributing factor. Cooking with solid fuels releases gases and other emissions that contribute to climate change, including carbon dioxide, methane, carbon monoxide, and short-lived climate pollutants like black carbon. Severe deforestation coupled with the direct emission from cooking using biomass contributed significantly to Nigeria's overall GHG emissions. Nigeria is the 15th largest emitter among all economies worldwide, and the largest emitter in Africa, with over 474.86 Mt CO_{2e} emission in 2012.[6]

The government of Nigeria recognizes the social and environmental harm caused by open fires and traditional stoves and is seeking to transition consumers from traditional biomass or charcoal stoves to cleaner, more efficient models, and where possible, cleaner cookstove technologies and fuels, like LPG and ethanol.

To facilitate and accelerate this transition, and enhance the benefits to the Nigerian people and environment, the government of Nigerian, in tandem with the local clean cooking sector, can apply best practices from traditional standards and labeling (S&L) programs. These include:

- **Testing products** to better understand their performance and to improve confidence among consumers and investors;
- **Establishing performance criteria** for efficiency, emissions, Health and safety to set a benchmark for manufacturers to meet, based on comprehensive market data; and
- **Conveying information** to producers, consumers, distributors, and retailers, and program implementers through labels and public awareness campaigns, to increase awareness of the benefits of clean and efficient cookstoves.

In response to Nigeria's interest in cookstove S&L, the Global Alliance for Clean Cookstoves (GACC), hired CLASP to support the design and implementation of a national cookstove S&L strategy. This process

[1] Data retrieved from the World Bank http://data.worldbank.org/indicator/SP.POP.TOTL?locations=NG (Accessed on April 18, 2017)
[2] Assuming 5.0 person per household based on the "2003 Nigeria Demographic and Health Survey"
[3] Data retrieved from the World Bank http://data.worldbank.org/indicator/SP.URB.TOTL.IN.ZS?locations=NG (Accessed on April 18, 2017)
[4] Cited in Global Alliance for Clean Cookstoves. (2012). Nigeria Market Assessment – Sector Mapping. Available from http://nigeriacleancooking.org/wp-content/uploads/2015/01/nigeria-market-assessment-mapping.pdf
[5] *Ibid.*
[6] CAIT Climate Date Explorer by the World Resources Institute. http://cait.wri.org/indc/ (Accessed on April 18, 2017)

included assessing the feasibility of an S&L program, and developing and documenting high-level recommendations, steps, and intervention activities to enact an overall S&L strategy. The strategy was developed based on conversations with more than twenty cookstoves stakeholders during a scoping mission in March 2017. Interviewed stakeholders are listed in Annex 1, and include government, industry, NGOs, professional organizations, testing labs, and others.

CLASP met with stakeholders to learn about current cookstoves policies, projects, and barriers; past projects and lessons learned; market maturity; and most importantly, the stakeholders' perspectives. Discussions also aimed to uncover the motivations of different stakeholders, how government processes and industry supply chains actually work on the ground, success stories, perceptions of S&L and its potential impact to consumers and industry, and ideal avenues to introduce the concepts of S&L to the cookstove market.

Insights from these conversations and desk research on Nigerian projects, programs and resources were combined with a review of international best practices for S&L programs to form the strategic recommendations and content of this strategy document. This strategy document will be shared with Nigerian stakeholders and updated based on stakeholder feedback.

2. Summary of Nigeria Market

In order to develop a cookstove standards and labeling (S&L) strategy specific to Nigerian cookstove market, we summarized the technical and sociopolitical characteristics of the current cookstoves sector in Nigeria. An assessment of market prerequisites will also identify whether an S&L program can be effective and which S&L characteristics (or "pillars" of S&L) and intervention options are *most* suitable for accelerating market transformation in Nigeria.

The ICS market is immature but growing

The ICS market in Nigeria is growing but it is in early stage of development. Based on GACC partners' self-reporting, approximately 730,000 improved cookstoves were sold or distributed in 2015.[7] The self-reported sales could be an underestimate given that not all ICS sales in Nigeria were captured, but in comparison to Nigeria's 36 million households nationwide, the ICS market share in still quite low. Because of the low market share of ICS in Nigeria, manufacturers agree that cookstove market is still competitive between improved and traditional cookstoves, rather than the types of improved cookstoves. The following is a detailed assessment:

Availability: The Nigerian market has several types of ICS technologies available, including biomass, ethanol gel, and LPG. Locally assembled and imported cookstoves are available from several key brands (e.g. Toyola, Musa Raymond, SMEFUNDS-GEB, and Envirofit).

Awareness: Given the low market share of ICS in Nigeria, consumer awareness on the benefits of ICS is low. Many distributors rely on door-to-door sales models to communicate the benefits of ICS in-person. No coordinated public communication campaigns have been carried out previously to promote ICS and their benefits.

Accessibility: ICS products are generally not available off-the-shelf in local markets or shops, except LPG canisters and LPG stoves, which are available in urban markets and shops. Most of the improved biomass cookstove manufacturers and distributors rely on direct sales agents, who can access greater geographical portions of Nigeria's population. For example, the SMEFUNDS-GEB uses over 7000 distribution leaders and many more agents to distribute their ethanol gel cookstoves to consumers in rural Nigeria.

Affordability: Improved cookstoves are generally more expensive than traditional stoves, which can be prohibitive for many consumers. The prices of ICS vary between approximately ₦3000 and ₦15,000, depending on the stove technology, brand, quality, country of origin, and size. In comparison, traditional stoves, generally made of steel rebar or tire rims, cost approximately ₦500 to ₦1500. Many manufacturers or distributors offer consumer financing to lower the upfront cost of ICS.

Acceptance: Many Nigerians are accustomed to cooking with an open fire or traditional stoves, so consumer acceptance of ICS is slow. The Alliance is conducting an ongoing Behavior Change Campaign led to increase consumer awareness, acceptance, and uptake of ICS.

[7] Cecilia Flatley, Senior Associate, Global Alliance for Clean Cookstoves. Personal communication by Email. September 29, 2016

The Nigerian government is motivated to engage in the cookstoves policymaking process and political will exists at multiple levels

The Nigerian government fully recognizes the importance of clean cooking and is motivated to promote the use of clean cookstoves. The Nigeria Clean Cooking Forum took place on November 28, 2016. It successfully mobilized high-level government support, including from the President of the Senate, the Honourable Minister of Environment, and the Honourable Minister of State for Petroleum Resources. The Forum highlighted a series of interventions to advance clean cooking in Nigeria. The Federal Ministry of Environment was identified as the leading government agency to develop implementable work programmes and to ensure the provision of budgetary allocations for the clean cookstoves sector in Nigeria.

The consensus among the Federal Ministry of Environment, the Standard Organization of Nigeria, the Energy Commission of Nigeria, the Federal Ministry of Power, and other government agencies, is that a cookstove standards and labeling program should be an essential part of Nigeria's clean cooking strategy moving forward. Transitioning to clean cookstoves by adopting S&L policies and programs will significantly contribute to the climate commitment made by the Federal Ministry of Environment.[8] Moreover, S&L programs will set performance requirements, which can be used in quantifying impacts, such as fuel saving, and CO_2e reduction.

The Federal Ministry of Environment is motivated to take the leading role in advancing Nigeria's clean cookstove effort and use the national climate commitment as a platform to push for cookstove S&L. There also appears to be no tension regarding roles of different government bodies, which presents an ideal landscape for collaboration and flexibility around implementation of different programs.

Existing frameworks for S&L programs are in place

Nigeria has an existing framework for standards and labeling programs in place. The Standard Organization of Nigeria (SON) is responsible for developing and implementing S&L programs, mandated by SON Act No. 14, 2015. Over 1300 Nigeria Industrial Standards are already in place and cover 8 groups of products at the moment. SON also runs various certification programs such as the NIS certification program and the Nigeria Quality Awards program. In terms of energy efficiency standards, SON has previously developed performance standards for CFL lamps and is currently developing standards and labeling program for air conditioners and refrigerators.

Draft standard exists, but further effort is needed to revise, approve and implement the standard

The Interim Benchmark for Biomass Cookstoves in Nigeria was jointly developed by ICEED, NACC, National Stove Eligibility Laboratory, SON, and other stakeholders in 2015. Although this interim benchmark has not been formally adopted by the government, it has been used to test products for many ICEED projects. The interim benchmark uses the water boiling test.[9] The metrics and tier levels follow the IWA framework. An overall star level is calculated by averaging the tier levels for each of the four main tiers.

[8] The Nationally Determined Contributions (NDC) commitments for Nigeria is to reduce GHG emissions by 20% unconditionally and 45% conditionally, by year 2030.

[9] The Water Boiling Test (WBT) is a laboratory-based test that can be used to measure how efficiently a stove uses fuel to heat water in a cooking pot and the quantity of emissions produced while cooking.

SON has developed a draft Nigeria Clean Cook Stove Standards which is based on the interim benchmark. SON will host a Technical Committee meeting on August 4 and 5 to finalize the standards and to develop a standards implementation plan.

There have been many new developments in international cookstove standards in the past several years. ISO 19867 standard which aims to harmonize testing, metrics and performance of cookstoves, is currently being developed and its applicability should be considered by SON and the Technical Committee.

All stakeholders can benefit from improved accuracy and reduced costs of testing

Two testing centers are available in Nigeria – the Stove Design and Testing Laboratory in Afikpo, hosted by ICEED, and the National Stove Eligibility Laboratory (NSEL) in Nsukka, hosted by the University of Nigeria.

NSEL uses the interim benchmark as the protocol for testing. Thermal efficiency testing is relatively reliable and consistent, but testing for CO and PM2.5 is challenging. Calibration of the CO sensor and the accuracy of PM sensor were two primary issues identified by National Stove Eligibility Laboratory (NSEL). NSEL does not have the capacity to test for black carbon (BC), and the current approach for reporting BC is to apply a factor to PM2.5 value.

Although cookstove testing was heavily subsidized, it is still considered expensive for many smaller cookstove manufacturers. NSEL charges ₦50,000 for testing each stove which is less than the actual cost of ₦200,000. The actual cost can be reduced to approximately ₦150,000 at the lowest if the testing demand increases and some degree of economy of scale can be achieved. It is difficult for NSEL to further reduce the testing cost due to their expenses for time, equipment, training personnel and other factors. Moreover, the testing center has to rely on diesel generators, which can supply uninterrupted electricity, rather than the unreliable electricity grid which adds to the testing expenses.

In terms of testing capacity, NSEL has the personnel and equipment to test 3 to 4 stoves per week. This capacity should be sufficient given the relatively small market size of ICS in Nigeria, however this capacity may need to be reinforced with the introduction of an S&L program and a growing ICS market.

Government needs more market and product performance information

The Federal Ministry of Environment is seeking additional ICS market and performance information, such as production and sales, ICS types and market shares of various types, as well as thermal efficiency and emission data. This information will contribute to the baseline of cookstove policies and allow policy makers to quantify savings. However, gathering market and performance information often times is very resource-intensive. Given the high costs of data collection and competing government priorities, comprehensive data collection may not be feasible at the moment. Policy makers could rely on existing data and use a simplified approach to kick-start cookstove S&L programs.

SON is mandated to carry out MV&E, but resources are limited

SON has compliance officers in all 36 states of Nigeria, who are mandated to carry out compliance and enforcement activities. However, these activities will only cover basic inspection of the correct use of labels, and ensuring correct markings. SON is mandated to have prosecution power, but prosecution is only done in extreme cases – for example, arrests have been made to traders who imported substandard tires to Nigeria.

SON is resource constrained to carry out MV&E activities such as spot-check testing, and performance verification. A voluntary approach for the cookstove S&L programs can be considered since it requires much less capacity for compliance and enforcement.

Industry's attitudes towards S&L programs are diverse

Manufacturers' opinions on cookstove S&L are a mixed bag. In general, the industry's response towards S&L programs is positive, but many of them have specific concerns and reservations.

Larger manufacturers in general are supportive of standards as a useful tool to promote improved cookstoves, however, they consider access to capital or microfinancing to consumers much more effective intervention options to scale up production and to increase market penetration of clean cookstoves.

Some manufacturers or distributors are concerned that standards would impose additional regulatory and cost burden to the industry that is still in its infancy. The high cost of testing is particularly prohibitive for small start-up manufacturers. A voluntary approach of the labeling program could be helpful for the manufacturers to understand the benefits of participating in S&L programs, without imposing mandatory regulations. Fully understanding the value of S&L program will help manufacturers to justify the cost in testing products and participating in S&L programs.

One cookstove manufacturer has the opinion that labels would not make as much impact on consumer purchase decisions as.other factors such as design, quality, appearances and cost savings. However, they recognized that participation in S&L programs could be an eligibility requirement for their distributors or partners, in which case they are willing to participate in the programs.

One of the largest ethanol gel stove distributors is supportive of S&L programs. However, there are concerns about associating this advanced technology with improved biomass cookstoves as there are significant performance and health benefit differences between them. They are therefore supportive of labeling approaches (e.g. a categorical label or a label including emissions) that can differentiate their products from the rest of the market.

There are some concerns from several manufacturers regarding the bureaucracy and budget limitations of government-led programs impacting the efficiency of the S&L program. Sub-standard products are still present on the market due to market surveillance limitations. Third party organizations such as NACC and the test laboratories are well regarded by industry.

Prices of ICS are high compared to traditional stoves, partly due to the high tax and tariffs

Table 1 summarizes the retail prices of improved cookstoves from several major manufacturers and distributors. The higher prices of improved cookstoves are partly due to the high tax and tariffs in Nigeria. As shown in Table 1, many local manufacturers or distributors import entire cookstove units or cookstove parts to Nigeria. In general, the import duty is approximately 20% whereas other taxes including VAT are approximately 10%. This means that prices of improved stoves can drop as much as 30% if all taxes are removed.

Table 1: Retail prices of ICS from key manufacturers and distributors in Nigeria

Manufacturer/Distributor	Retail Price (₦)	Import Status
Envirofit	Old model: 6,500 New model: 15,000	Import all cookstove parts from overseas and assemble locally in Nigeria
Toyola	Small size: 3,000 Medium size: 5,000 Large size: 10,000	Import metal cladding and doors from China and clay liner from Ghana.
Sosai ER (EcoZoom)	15,000	Import EcoZoom cookstoves from overseas
D.A.R.E (Safe80)	15,000	Import cookstove parts from China and assemble locally in Nigeria
Zagos	Single hob: 3,000 Double hob: 6,000	Import ethanol stoves from China
SMEFUNDS-GEB	Single hob: 5,000 Double hob: 8,500 Maami Stove: 1,500 Converter component for kerosene stoves: 750	Import ethanol stoves parts from China and assemble locally in Nigeria
Musa Raymond	5,000 for a bundle which includes a stove, firelighter and 2kg bag of charcoal briquettes	Cookstoves are manufactured locally, but firelighters (made of saw dust) are imported from Belgium.
Nenu Engineering	4,000 – 4,500	Locally manufactured

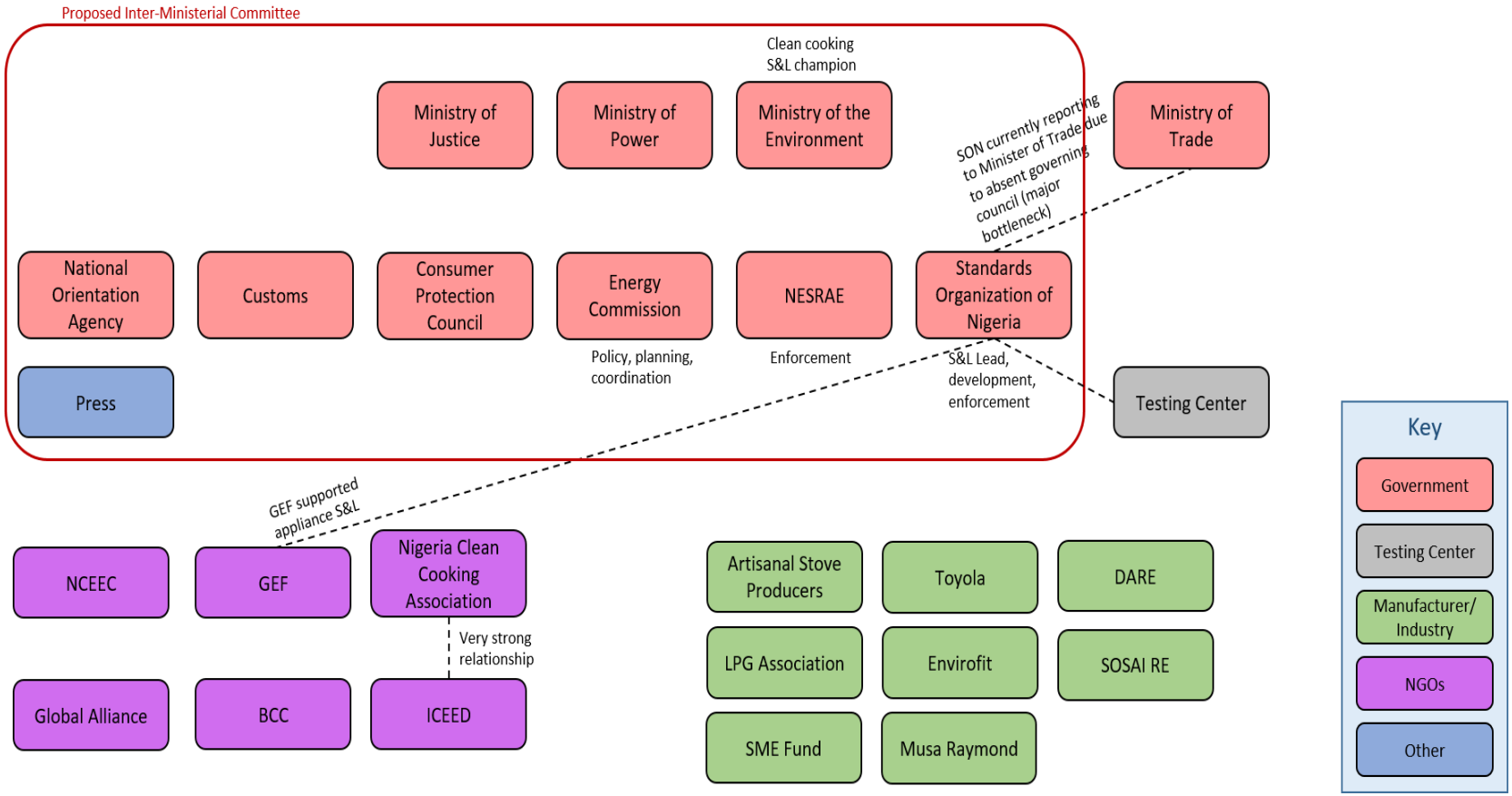
NACC and ICEED are the key NGO actors in the Nigerian ICS scene

Most stakeholders regard NACC and ICEED as well-respected key actors on the Nigerian ICS scene. NACC is well connected and respected in Nigeria; some manufacturers are willing to pay for NACC membership in order to enhance their impact. ICEED has multiple ongoing and past cookstove projects and is well placed to collaborate on any pilot S&L program activities.

Institutional Mapping

Figure 2 is a map of Nigerian cookstove stakeholders and their relationships. This map was developed based on CLASP's 2017 scoping mission, and, while not exhaustive, attempts to represent each sector and most active stakeholders associated with the improved cookstoves market.

Figure 2: Map of Nigeria's Institutions and Processes



3. Recommended Approach to Designing Cookstove S&L in Nigeria

Based upon the market summary compiled from interviews with stakeholders, the maturity of the improved cookstoves market, and international best practice, the following are four recommended characteristics to help define S&L policies and programs in Nigeria. These characteristics, or approaches, have been identified as those most likely to increase efficacy and impact, and minimize risk or burden to industry for any S&L program implemented in the short-term.

Overall Approach: voluntary standards and voluntary labels for cookstoves

Given the nascent nature of the current ICS market and different views from manufacturers, a mandatory S&L program may have adverse impacts on the ICS industry in Nigeria, especially for smaller ICS manufacturers. CLASP therefore recommends that policy makers in Nigeria start their cookstove program with voluntary standards and voluntary labels. Under this voluntary approach, manufacturers choose to participate in the S&L program, test their products based on the voluntary standards, and affix the label if their products meet the performance requirements. Manufacturers are not obligated to participate in the program.

From the perspectives of program implementation, voluntary S&L programs are easier to launch and face less opposition from industry. Voluntary approach allows policymakers to kick-start S&L programs and lay the groundwork for potential mandatory programs in the future. Compared to mandatory programs, voluntary programs also often require significantly less compliance capacity and experience for the implementing organization, which aligns well with Nigeria's limited enforcement capacity and experience. Voluntary programs only require compliance of products entered into the program as well as potential false-claims by non-participating or non-eligible products.

From the market transformation perspective, voluntary S&L programs send signals to the market and the consumer that cookstove performance matters. Targeted consumer awareness campaigns can be built around the voluntary S&L programs to educate Nigerian consumers about the benefits of switching to ICS. Voluntary S&L programs will also enable other highly effective market transformation tools including incentives, procurement, awards programs, and others.

A potential risk for adopting a voluntary S&L approach is that manufacturers will not participate. Policy makers may consider several strategies to mitigate this risk and attract manufacturers to participate in the voluntary program:

- Closely involve industry players in the S&L program development phase so that they will clearly understand the value in participating in the program;
- Conduct targeted communication campaigns to raise consumer awareness of the cookstove label brand;
- Collaborate with other cookstove deployment programs or initiatives to use the voluntary standards and labels as a program eligibility requirement;
- Provide bulk procurement opportunities for voluntary program participants;
- Provide financial incentives (e.g. tax incentives).

Technology-neutral approach

Different ICS technologies are available on the Nigerian market, most notably, wood, charcoal, LPG, and ethanol cookstoves. The consensus among ICS manufacturers was that the primary competition is between the ICS industry and the traditional cookstove industry, not necessarily between ICS companies and technologies. Therefore, the proposed voluntary S&L program should adopt a technology-neutral approach, which will be applicable to all ICS manufacturers (e.g. charcoal, LGP, or ethanol ICS manufacturers) who wish to participate in the program. If their ICS products meet the preset S&L program requirements, the manufacturers will be able to use the label and distinguish themselves from traditional stoves.

The alternative to a technology-neutral approach is a technology-specific one – where an S&L program only applies to wood, for example, or biomass (wood and charcoal) – which can have perverse disincentives, especially when supply chains for certain technologies or fuels are not well developed. A technology-neutral approach can maximize the benefit of changing market conditions that support innovation in technologies or fuels over time. This is especially relevant for government-led S&L programs, which can take many years to implement, during which markets and consumer preferences may shift.

Build Cookstove Labeling Program based on the Upcoming Air Conditioner and Refrigerator Labeling Programs

There are two primary types of labeling approaches, comparative and endorsement. Comparative labels use a number of different “grades” or “tiers,” to indicate the level of performance of products. This approach allows consumers to compare products based on their performances. Currently SON is developing a labeling program for air conditioner and refrigerators based on the comparative labeling approach.

Endorsement labels require the products adhere to a set of performance requirements. Any products that meet the set performance requirements can affix endorsement labels. Voluntary endorsement labels are easier to implement and easier for consumers to understand. CLASP has recommended a voluntary endorsement approach in other countries such as Uganda, Ghana, and Kenya since an endorsement label is more suitable for a nascent market.

However, SON is undertaking major efforts to develop and implement an air conditioner and refrigerator comparative labeling program in Nigeria. This nation-wide program will consist of large scale communication campaigns. While recognizing that an endorsement label is the most suitable and effective tool to start transforming nascent markets, it may be more cost-effective from a program development perspective to take advantage of the upcoming AC and refrigerator programs by using the same, or at least a similar, labeling approach. There are several key benefits of building on the upcoming programs:

- By using the same labels as the AC and refrigerators, less duplicative resources and efforts are needed to research, design and test new labels for cookstove programs;
- Cookstove labeling programs can continue to build on the consumer awareness gained from communication campaigns for AC and refrigerator labels;
- A common labeling approach will streamline program management by SON and avoid management cost for a separate program.

Recognizing that the target audience for ACs and refrigerators labels could be potentially different from the target audience for cookstove labels, the best approach is to conduct consumer research to study the

effectiveness of labels and to make necessary modifications. For example, the Energy Commission of Ghana has developed a cookstove label that is based on the existing Ghana energy efficiency labels for ACs and refrigerators and tested the cookstove label through consumer research. Similar approach can be applied in Nigeria as well.

Consider an Integrated Labeling Approach for Cookstoves

The integrated labeling approach is a common practice for on-grid products. The appearance of integrated label is very similar to comparative label, however, the integrated label contains an endorsement component that will be only applicable to the highest performing products in the class.

For example, as illustrated in Figure 1, the China Energy Label uses the comparative label to indicate the energy efficiency performance levels of products, and uses the ”top-runner” seal to indicate the best-performing products in the class. A similar approach was also used by Brazil, Australia, the EU, and others.

Figure 1: Examples of Integrated Energy Labels (red circle indicates endorsement label)

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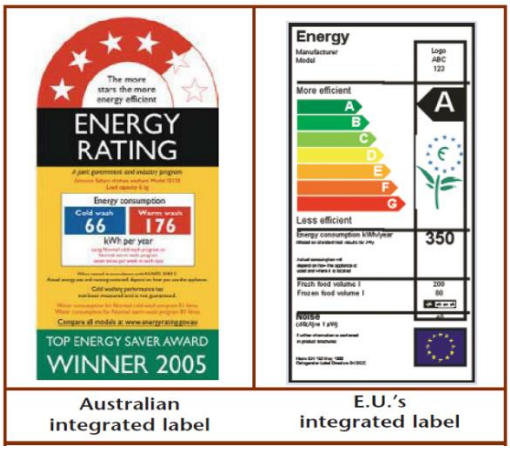
<td> 
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<td>China Energy Label for Household Refrigerators</td>
<td>Brazil energy efficiency label and PROCEL seal</td>
<td>Integrated label examples from Australia and the EU</td>
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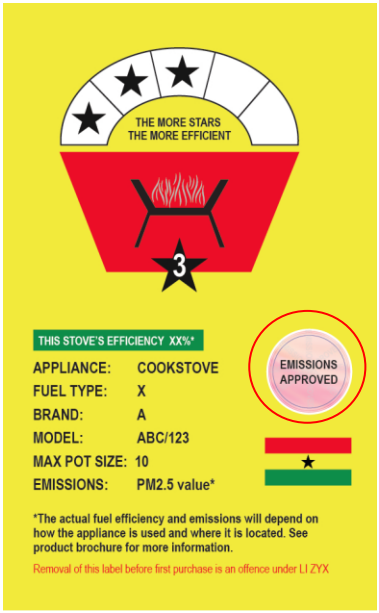
In the case of an integrated label for cookstoves, the comparative component is used to depict the thermal efficiency of the cookstoves and the endorsement component is used to indicate emissions. More efficient ICS will enjoy a higher level of tiers or grades than others, while an additional endorsement mark for emissions can be applied to cleaner products such as LPG or ethanol gel cookstoves, which will have lower emissions than biomass ICS in almost all cases.

Depicting both thermal efficiency and emission by tiers will potentially confuse consumers and as such, we recommend depicting emissions with an endorsement mark, which will clearly indicate whether a product meets a specific emission requirement. The emission endorsement mark is critical for buy-in from

cleaner ICS manufacturers because some of them were unwilling to associate LPG or ethanol products with biomass products by using the same labeling scheme, unless their products can be distinguished from biomass products.

Ghana is currently pursuing this integrated labeling approach in its forthcoming cookstove programs. As shown in Figure 2, the draft Ghanaian cookstove label uses the stars on the top of the label to categorize cookstoves by thermal efficiency, and if a product meets the voluntary emission requirements, that product can bear the emission seal (circled in red). With the assistance from GACC and CLASP, Ghana also completed market research to investigate consumer perception of the proposed labels. Lessons learned and experience from Ghana's integrated labeling scheme can inform the design of the Nigerian cookstove labeling programs.

Figure 2: Draft cookstove label for Ghana (red circle indicates emission endorsement)



4. Recommended Cookstove S&L Policies and Programs

This section provides an overview of the recommended cookstove S&L policies and programs, and also provides recommendations on the roles of responsibilities of key actors. CLASP recommends three high-level activities in order to carry out the cookstove S&L program:

1. ***Establish inter-ministerial steering committee and endorse proposed cookstove S&L strategy*** to secure high-level political support and assign clear roles and responsibilities of various stakeholders.

2. ***Develop and implement cookstove S&L programs:*** the Inter-ministerial Steering Committee will task SON with development of the S&L program, such as developing and adopting testing and performance standards, implementing a labeling program, ensuring market surveillance and testing capacity, developing a communications campaign, and conducting program evaluations.

3. ***Develop and implement tax incentive programs*** to complement the S&L program, and to encourage manufacturers and distributors to participate in the program.

This section provides an overview of these three activities while Section 5 details step-by-step actions and activities involved in these recommended activities. The details of these programs are described as follows:

1. Establish Inter-Ministerial Steering Committee and endorse proposed cookstove S&L strategy

According the Standard Organization of Nigeria Act of 2015, SON is mandated to develop, implement and enforce standards in Nigeria. The governing body of SON, the Standards Council of Nigeria, should be responsible for designating, establishing and approving standards in Nigeria. However, this council is yet to be established. In the absence of the Standards Council, a higher-level government body has to provide high-level political support in order for SON to prioritize and carry out cookstove S&L work. The primary objective of this Inter-Ministerial Steering Committee is to review and endorse the proposed cookstove S&L strategy, which lays out the necessary steps, and defines the roles and responsibilities of key stakeholders in order to carry out the cookstove S&L work in Nigeria. The Federal Ministry of Environment is well placed to take the lead and establish an Inter-Ministerial Steering Committee which would involve all key government agencies.

2. Develop and implement cookstove S&L programs

Once the Inter-Ministerial Steering Committee is established and this cookstove S&L strategy is endorsed, SON will be tasked to develop S&L programs. Nigeria has an established policy framework for S&L programs and SON has the experience and expertise in designing and implementing S&L programs. In order to maximize the effectiveness of using S&L to promote improved cookstoves in Nigeria, CLASP recommends a comprehensive cookstove S&L program which will include the following components:

2-A. Ensure testing capacity

2-B. Collect baseline market and impact data

2-C. Finalize cookstove standard

2-D. Design and implement labeling program

2-E. Design and implement communication campaign

2-F. Build compliance capacity and scheme

2-G. Evaluate program

Detailed steps, activities and rationales for each of the above-proposed components are described in Section 5.

3. **Develop and implement tax incentive programs to complement S&L programs**

Complementary policies such as financial incentives are very effective in encouraging manufacturers to participate in S&L programs and raise the product efficiency levels. Financial incentives can be in many different forms, such as subsidy, rebate, or tax credits. Some of the industrial stakeholders in Nigeria preferred subsidy or rebates since these incentives are more direct and can benefit both ICS importers and local manufacturers. However, subsidy and rebate programs typically require government to provide additional budget for incentives, which might not be easy to achieve in Nigeria at the moment. On the other hand, tax incentives do not require additional budget from the government. Therefore, CLASP recommends import duty tax reduction/exemption, which is based on the S&L programs.

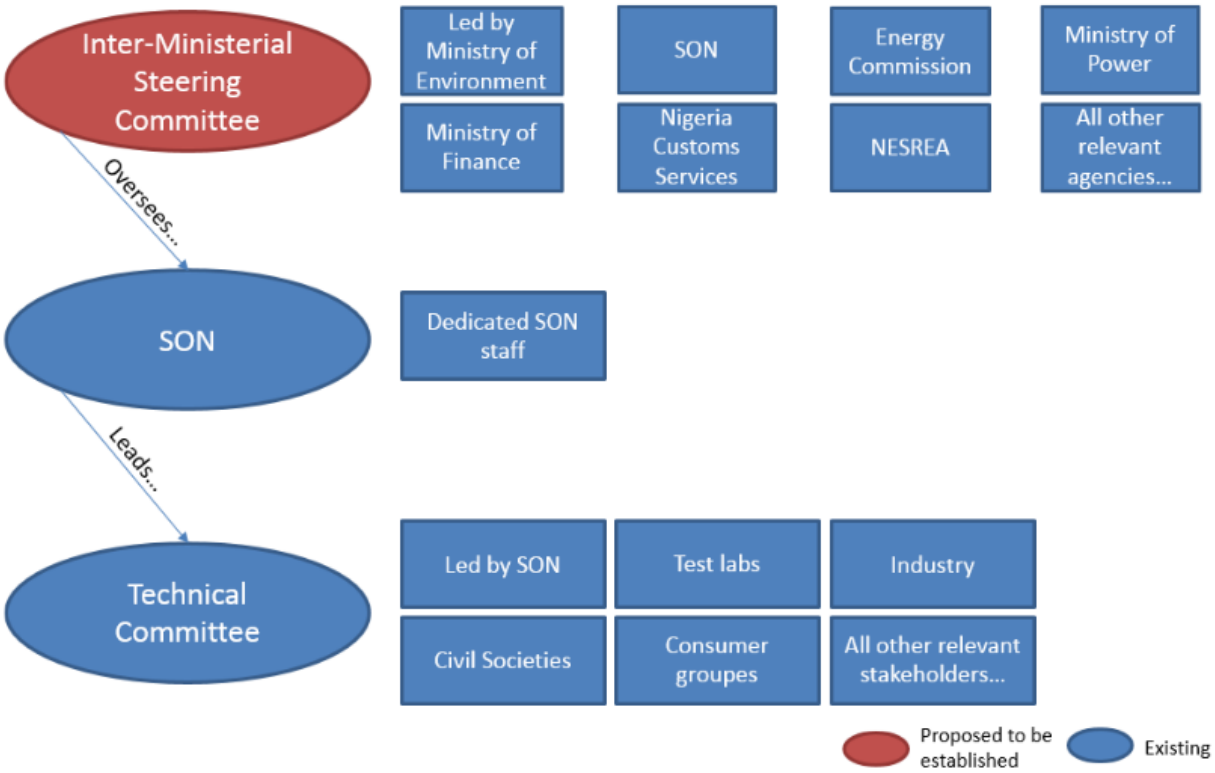
Most of the ICS distributor/manufacturers in Nigeria import either entire ICS units or ICS parts from overseas. The import duty on these products and parts ranges from 20% to 30%, resulting in high market price of ICS. With the tax incentives, the distributors and manufacturers will be more attracted to join the S&L program and therefore accelerating the market transformation towards more efficient and cleaner cookstoves.

Another advantage of employing import duty tax reduction program is that it does not require additional financial budget from the government. Instead, the tax incentives will potential affect the tax revenues of the government, but the level of impact on tax revenue can be managed by adjusting the eligibility levels for the incentive and the amount of the tax reduction. Instead of a class-wide tax reduction, the incentives can be implemented on a case-by-case basis, which will allow policy makers to have more control over the potential impacts on tax revenues. The tax incentive program can be evaluated periodically for policy makers to assess the effectiveness of the tax incentives and how it impacts tax revenues.

Roles and Responsibilities of Key Actors

In order to develop and implement the above-proposed cookstove S&L programs in Nigeria, CLASP has identified the roles and responsibilities of three key actors in the S&L development process, including the Inter-Ministerial Steering Committee, SON and the cookstove Technical Committee. Figure 3 illustrates the relationship between the three key actors, whereas the roles and responsibilities of other stakeholders are further explained in Section 5 where detailed S&L programs and activities are introduced.

Figure 3: Illustration of Key Actors Relationships



Inter-Ministerial Steering Committee

This Inter-Ministerial Steering Committee has not been established, but would play a vital role in the S&L program development. The key objective this Inter-Ministerial Steering Committee is to endorse the high-level cookstove S&L strategy (*e.g. this strategic recommendation document*) which will form the foundation of any cookstove S&L work in Nigeria. This committee will engage all relevant government agencies and harness high-level support. This Inter-Ministerial Steering Committee is responsible for providing strategic guidance, driving the overall cookstove strategies, and overseeing SON's S&L program development efforts. Moreover, this committee is responsible for liaising with other government agencies to implement complementary policies. For example, the committee may need to collaborate with the Federal Ministry of Finance and Nigeria Custom Services to implement tax incentives for importing ICS units or ICS parts.

The Federal Ministry of Environment, which is viewed as the champion of cookstove work in Nigeria, is well placed to lead this Inter-Ministerial Steering Committee. The Federal Ministry of Environment can leverage its platform of setting national climate change strategies to take the leadership of cookstove S&L work in Nigeria. The GHG reduction achievement and reduction in biomass use from adopting cookstove S&L programs will help the Federal Ministry of Environment to meet its climate and environment goals.

NACC may continue its role as the convener of cookstove industry by serving as the secretariat of the Inter-Ministerial Steering Committee. This committee should involve stakeholders from all relevant government agencies, including the Federal Ministry of Power, Energy Commission of Nigeria, SON, and the Federal Ministry of Health etc.

Standards Organization of Nigeria (SON)

As the mandated organization responsible for S&L programs, SON is best-placed to lead the implementation and enforcement of the cookstove S&L program. SON is currently leading the effort in finalizing the Nigeria Clean Cook Stove Standard, which is currently under discussion by the Technical Committee, but additional political support from higher-level government can further accelerate the standard finalization and implementation process. The Inter-Ministerial Steering Committee will be able to provide the necessary high-level support SON needs and provide input on proposed programs as they move forward.

SON is responsible for leading and overseeing the cookstove Technical Committee responsible for developing the technical content of S&L programs. SON will also lead other components of the S&L program with support from other organizations.

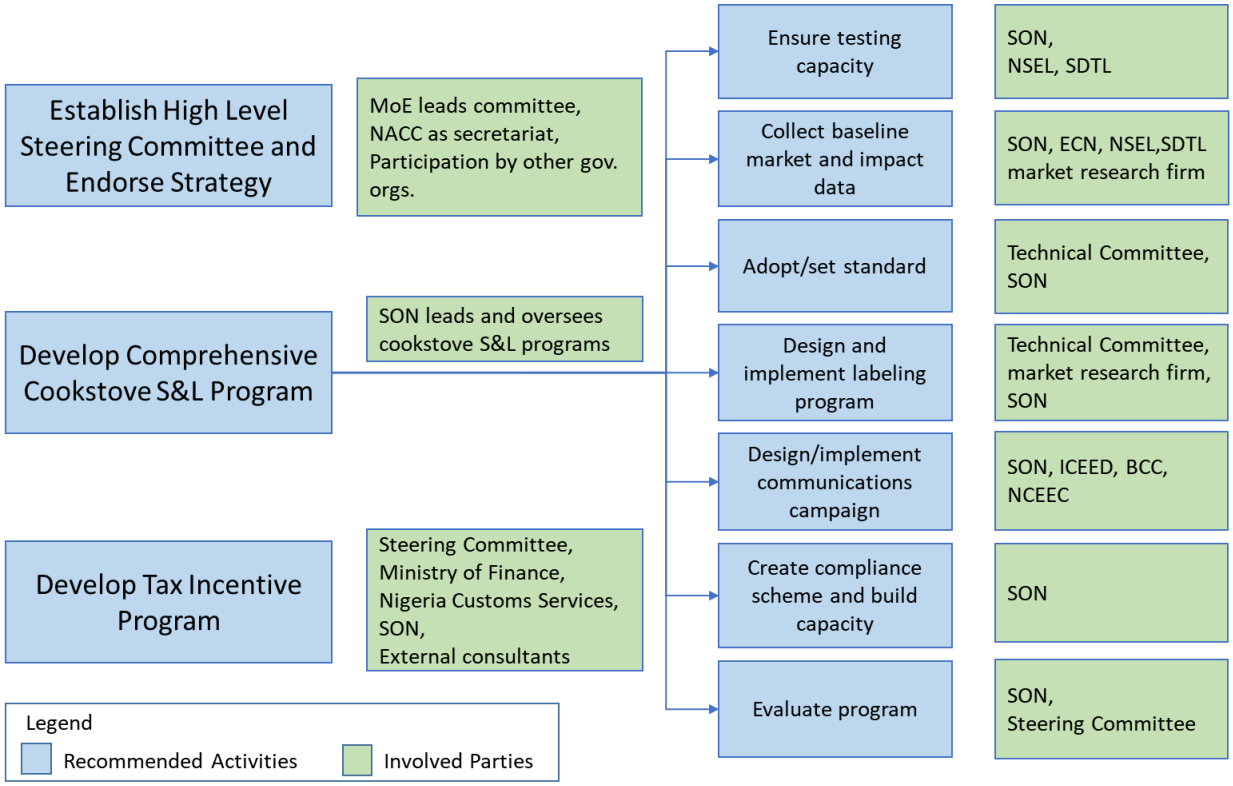
Technical committee for S&L program development

The existing cookstove technical committee, which led the development of the interim benchmark, should continue to be convened and led by SON. The current technical committee consists of a wide range of experts such as policy makers from SON, industry representatives, cookstove experts, testing facilities, consumer groups, and civil societies. They are well placed to develop all the technical content of the S&L program, such as reviewing existing international cookstove testing and performance standards, conduct necessary market research to inform the standards development, define performance levels, and quantify policy impacts.

5. Best Practice Steps and Activities to Implement Recommended S&L Policies and Programs

This section serves as a preliminary action plan for implementing the recommended approach outlined above. Figure 4 provides a high-level summary of recommendations, and is followed by more detailed steps and activities to implement each corresponding recommendation.

Figure 4: Overview of cookstove S&L programs and activities



1. Establish Steering Committee and Endorse Proposed Strategy

This proposed strategy lays out the recommended high-level approaches for S&L programs in Nigeria, the detailed steps of carrying out each S&L activity, as well as the roles and responsibilities of each relevant stakeholder. This strategy should be agreed and adopted by all stakeholders.

As a first step to implementing the national cookstove S&L strategy, an Inter-Ministerial Steering Committee, ideally with representation from SON, the Federal Ministry of Environment, and other key stakeholders, should be appointed to enact the strategy and ensure the proposed S&L program and other market transformation initiatives are aligned and optimized to achieve the sector's clean cooking goals. The primary responsibilities of this Inter-Ministerial Steering Committee are to:

- Convene relevant stakeholders and endorse the proposed cookstove S&L strategy;
- Streamline the involvement of different government organizations, and clearly assign roles and responsibilities;
- Provide political support whenever possible, and ensure activities are implemented as planned;

- Collaborate with other government branches to secure budget and government funding in order to carry out the proposed activities;

The Federal Ministry of Environment (MoE) is best placed to serve as the chair of this Inter-Ministerial Steering Committee for cookstove S&L programs. As a public-private partnership connecting government agencies, cookstove industries and civil societies, NACC can serve as the secretariat of the Steering Committee.

Rationale

As the governing body of SON, the Standard Council of Nigeria, has not yet been established, the Inter-Ministerial Steering Committee would provide SON with clear direction to prioritize and kick-start a national cookstove S&L program.

The Steering Committee will ensure agreement and buy-in on an initial strategy and streamline the process to implement a coordinated S&L program. This document can serve as the strategy or an initial draft. The Steering Committee is also essential for overseeing the implementation and resource allocation of the program.

Expected outcomes

- Finalized strategy to guide the development, adoption, and implementation of an S&L program and other market transformation initiatives.
- Established Inter-Ministerial Steering Committee to enact and maximize proposed strategy.
- Stakeholder awareness, input, and buy-in of proposed programs.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Appoint a steering committee to enact strategy	▪ MoE ▪ NACC ▪ All other relevant agencies	Medium-High	Staff time	1 to 2 months
Hold Steering Committee meeting to endorse strategy	▪ MoE ▪ NACC ▪ All Steering Committee Members	Medium-High	Staff time $2,000-5,000	2 to 4 months
Regular Steering Committee meeting	▪ MoE ▪ NACC ▪ All Steering Committee Members	Medium-High	$2,000-5,000 per meeting	Ongoing, quarterly or semi-annually

2. Develop Comprehensive Cookstove S&L Program

Once the Inter-Ministerial Steering Committee is established and the proposed cookstove strategy is endorsed, the next step is to develop a comprehensive cookstove S&L program. The recommended cookstove S&L program include a wide range of activities, which are described in detail in the next few

sections from 2-A to 2-G. Given the nature of the cookstove market in Nigeria, CLASP recommends policy makers to follow the high-level approaches for the cookstove S&L (described in Section 3):

- Start with voluntary S&L programs
- Use a technology-neutral approach
- Build cookstove labeling program based on the upcoming air conditioner and refrigerator labeling programs
- Consider to use integrated labeling approach

Rationale

The rationale for recommending a comprehensive cookstove S&L program are:

- Comparing to only carry out several components of S&L activities, a comprehensive cookstove S&L program will maximize S&L effectiveness in promoting improved cookstoves in Nigeria;
- Nigeria has an established policy framework and SON has previous experience and expertise to implement a comprehensive cookstove S&L program;

Expected outcomes

- Comprehensive cookstove S&L designed and implemented.

2-A. Ensure testing capacity

The first step of developing the S&L program is to ensure testing capacity and resources are available to test products according to the standard and manage the demand. The two current testing facilities in Nigeria, namely NSEL and SDTL, should be able to provide sufficient testing capacity. However, these test facilities need to continue building their testing capabilities for emissions such as PM2.5. An assessment of testing quality and capacity would help identify whether upgrades to the testing facilities are needed to guarantee more accurate and consistent test results. This can be achieved by requesting additional government budget through the Inter-Ministerial Steering Committee to carry out additional capacity building and additional quality assurance plans with regular calibration.

In addition, the high testing cost may prevent smaller manufacturers from participating in the S&L program. One possible way to encourage smaller manufacturers to participate in the S&L program is to highlight the benefits of participating in the program, especially when a tax incentive is involved. Manufacturers needed to be educated about the benefits of testing and participating in cookstove S&L programs, so that they will be willing to pay for testing when they see the value of the program. In addition, other complementary policies such as incentive programs may help smaller manufacturers to recover the testing costs.

Rationale

Reliable testing is fundamental to the success of any S&L program, and requires a reliable testing facility. Without either, quality cannot be assured and even speculation of unreliable testing can undermine industry and consumer confidence, which would be detrimental to any S&L program, but especially a voluntary program.

Expected outcomes

- Accredited lab with full capacity to meet demands of proposed S&L programs.
- Consumer and industry confidence in testing results and dependent S&L programs.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Conduct testing capacity and resource assessment	▪ Led by SON or consultant	Medium-High	Staff time	1-3 months
Necessary servicing and maintenance of testing equipment	▪ Led by test laboratories, and supported by SON and Inter-Ministerial Steering Committee	Medium-High	Depending on the type and amount of testing equipment needed for servicing	3-6 months
Identify and accredit lab as needed	▪ Led by Son	Medium	Staff time	3-6 months

2-B. Collect baseline market and performance data

Market and performance data are essential in setting standards and labeling requirements, as well as quantifying potential policy impacts for implementing an S&L program. Existing data may be available from a number of resources, such as:

- Testing centers and researchers in Nigeria
- Manufacturer data sets;
- Data from neighboring countries;
- Previous cookstove projects;
- The Clean Cooking Catalog by the Global Alliance of Clean Cookstoves.

Baseline market data is critical, and includes the number and variety of product types and performance levels available on the market. Market and engineering data gathered and analyzed can include:

- Annual sales volumes
- Sales prices
- Production volumes
- Import and export volumes
- Market share of different technologies and models
- Product efficiency and emission performance
- Product safety and durability information

While complete data is ideal, S&L programs can be successful with incomplete data and best estimates may suffice when necessary. Simple approaches such as testing a number of popular ICS models available on the market can provide a good insight of the ICS performance levels in Nigeria, and help inform the decisions on where to set the performance levels.

SON can lead the effort in data collection and product sample testing, with input from the cookstove Technical Committee and the Energy Commission of Nigeria, the research arm for energy policies in Nigeria.

Rationale

Baseline market data is needed to optimize and justify the design of any S&L policy or program. This information informs the process of setting performance criteria and evaluating the impact of any S&L policy or program. Without it, a program may be too lenient and encourage the uptake of inefficient cookstoves, or be too ambitious and discourage the uptake of efficient and clean cookstoves.

Expected outcomes

- Data depicting the distribution of products by technology, efficiency, and emissions performance.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Compile existing data and assess data needs,	▪ Lead by SON, with support from the Technical Committee, and ECN	Medium-High	Staff time	1-2 months
Conduct baseline market assessment	▪ Lead by SON, with support from the Technical Committee, and ECN	Medium-High	$25,000-$50,000	3-6 months
Consult stakeholders	▪ Lead by SON, with support from the Technical Committee, and ECN	Medium-High	Staff time;	1-2 months
Procure and test ICS samples	▪ Lead by SON, with support from the Technical Committee, ECN and test labs	Medium-High	$5-$50 per stove for procurement; ₦50,000 (~$140) per stove test	1-2 months

2-C. Finalize cookstove standard

- SON is planning to host a Technical Committee meeting on August 4 and 5, with the objectives to finalize the draft Nigeria Clean Cook Stove Standard and to develop a draft standard implementation plan. In this meeting, we recommend the Technical Committee to consider the following items in the standard finalization process:

1) Consider making reference to the draft ISO 19867 standards. ISO 19867 is aimed to harmonize test protocols, metrics and performance requirements and it will become the international standard once approved. Making reference to the ISO standard may help Nigeria cookstove standards to harmonize testing and performance metrics of cookstoves with other countries. However, if it is not possible for the Committee to consider ISO 19867 at this stage of standard development, the Committee may consider aligning to the ISO standards in future Nigeria cookstove standard revisions.

2) Include a requirement for testing emissions – but, if possible, do not mandate a minimum threshold for emissions performance at this time, since accurately and consistently testing for emission still remains a challenge. In the meantime, testing facilities including NSEL and SDTL, can offer emissions results and potentially suggestions on improving stove design, and vice-versa; manufacturers can offer testing facilities advice on testing emissions. As the test labs build on their capacities as well as strengthen quality assurance measures, emissions requirements can be set in the standards.

3) If needed, change the existing efficiency criteria to match policy goals and market conditions (rely on inputs here from the *baseline market data*).

4) Consider broadening the scope of the standard to include all improved cookstove technologies, such as LPG and ethanol, not just biomass stoves.

- Finalize the Nigerian Clean Cook Stove Standard and incorporates comments and recommendations from the Technical Committee meeting which will take place on August 4 and 5.
- Consult directly with stakeholders throughout the entire process of developing the standard, especially soliciting input from manufacturers and retailers.
- Estimate the expected impact of the standard on industry and others influenced by the new criteria and broadened scope, present to stakeholders.
- Ensure the standard is designed to allow for other market transformation programs to use it as their underlying criteria, such as tax incentives or procurement programs.

Rationale

The draft Nigerian Clean Cook Stove Standard uses the TC 285 test protocol and performance requirements and adopts an approach for setting star levels by averaging various performing metrics (i.e. thermal efficiency, emission etc.). However, a more recent ISO 19867 standard is being developed and finalized, that reflects the latest development of international best practice for cookstove testing and setting performance requirements. The Technical Committee in Nigeria needs to be aware of this information and consider the applicability of the new ISO standards. However, given that SON is planning to finalize the draft standard in Nigeria, adding major changes to the draft may not be possible. In this case, the Technical Committee may wish to align with the ISO standard in future revision of the Nigerian standard. Another reason for considering aligning the Nigerian standard with the ISO standard is that harmonized standards cross-borders will accelerate the ICS market growth and lower trade barriers – manufacturers do not have to conform to different standards and regulations in different countries.

Testing for emissions is required but manufacturers do not need to meet specific emission performance requirements at the moment. The reason is that the current capacity for testing emissions by NSEL and

SDTL still needs improvement, and therefore it is difficult to mandate manufacturers to meet emission requirements. However, requiring emissions *testing* will build testing capacity at NSEL and SDTL and other international labs (for imported stoves), and create a culture of testing within the industry. However, emissions testing accuracy should be improved and verified before SON *enforces* emission performance. Otherwise, inconsistent testing can lead to inaccurate information being used and conveyed in S&L and other market transformation programs, and potentially undermine the value and perception of the program, as well as S&L programs generally.

A technology-neutral approach to any S&L policy is more likely to have a greater impact in Nigeria in the short-term due to the availability of a variety of clean products.

Estimating the potential impact of the standard will help ensure the performance criteria is appropriately set and provides industry with evidence that their perspective is considered.

Expected outcomes

- Standard appropriately designed for sector goals and Nigeria market based on stakeholder input.
- Estimated impact of revised standard.
- Buy-in from industry and other stakeholders into the standard.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Draft standard (incl. emissions, efficiency, int'l best practice, scope)	▪ Led by SON or consultant ▪ All ICS and related cookstove stakeholders	Medium-High	Staff time	3-6 months
Estimate potential impact of revised standard	▪ Led by SON or consultant	Medium-High	Staff time	1-2 months
Align with other market transformation programs (domestic and regional)	▪ Led by SON or consultant ▪ NACC, Ministries, others	Medium-High	Staff time	1-2 months
Consult stakeholders	▪ Led by SON ▪ All ICS and related cookstove stakeholders	Medium-High	$2000-$5000 per meeting	1-2 months
Adopt standard	▪ Led by SON	Medium-High	Staff time	6-12 months

2-D. Design and implement labeling program

Step 1: Develop labeling program plan with stakeholders

Develop a highly detailed implementation plan for the labeling program that includes identifying the organization to lead the program, as well as program goals, approach, scope, roles, and compliance. SON is well placed to lead the development of this labeling program plan, with support and input from all

stakeholders. This plan can leverage existing practice of the air conditioner and refrigerator labeling program.

Step 2: Identify program criteria

- Once the Nigeria Clean Cook Stove Standard is finalized, the labeling program can consider using the metrics and performance requirements as the foundation for the labeling program requirements.
- The cookstove Technical Committee will identify performance and other product criteria (such as safety, durability, or standardization) for the program. Include thermal efficiency and any emission parameters that can be reliably tested.
- Estimate the potential impact of the program based on the proposed criteria, including qualitative data such as expected industry participation and number of qualifying products on the market.
- Consult stakeholders throughout the process, especially manufacturers.

Step 3: Design label

- Determine technical specifications that the label will communicate and other attributes to include (such as brand name);
- Design cookstove label. Assuming air conditioner and refrigerator labels have been designed and launched, the cookstove label should use the similar label design, with additional elements or parameters that are unique for cookstoves;
- Test labels among consumers to determine the effectiveness of the label;
- Revise label if necessary based on the feedback of label testing.

Step 4: Launch labeling program

- Finalize program rules and terms of reference that govern the program. This document will be essential for providing industry with the information they need to participate meaningfully in the program, and overall transparency.
- Finalize an implementation plan that clearly defines implementation needs, such as financial and staff resources, and process, such as the steps to certify qualified products.
- Host workshops, as needed, to detail and define how to align the labeling program with the cookstove standards, as well as any regional S&L cookstoves programs.
- Consult stakeholders to solicit feedback and seek buy-in

Rationale

The resources and planning required to implement and administer the labeling program cannot be overlooked. The existing air conditioning and refrigerator programs will provide a reliable framework to mimic or build upon. However, best practice will be to follow all the steps required to plan and implement the cookstoves label, especially given that cookstoves are more complex and have a broader consumer base than air conditioners and refrigerators.

Expected outcomes

- Labeling program plan.

- Labeling program criteria.
- Informed and tested label design.
- Successfully launched labeling program.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Develop program plan	▪ Led by SON	Medium-High	Staff time	1-3 months
Identify program criteria	▪ Led by cookstove Technical Committee	Medium-High	Staff time	1-2 months
Label Design	▪ Led by SON, implemented by PR firms	Medium-High	$2000-$10000	1-2 months
Launch labelling program	▪ Led by SON ▪ All ICS and related cookstove stakeholders	Medium-High	$20000 for program launch activities	1-2 months

2-E. Design and implement communications campaign

- Coordinate with communication campaigns for air conditioner and refrigerator labeling programs; If possible, combine communication efforts with other programs;
- Coordinate with other cookstove communication efforts such as the behavior change communication (BCC) campaigns;
- Carry out targeted education and communications campaigns for the cookstove label, with a specific focus on the culture of quality, the impact the programs can make, and how consumers should use the labels;
- In addition to other conventional communication channels such as TV ad, radio, press media, consider communication tactics that are specific to cookstoves, such as demonstrations, roadshows and the use of women or church groups.

Rationale

As previously described, communications efforts are key to the success of labeling programs, to ensure industry and government understand the value of the program, and consumers learn to associate the label with quality products. Kenyan stakeholders have all expressed that consumer education and awareness is key to any clean cookstove programs.

Any communication efforts should be aligned, coordinated, and built upon existing communication efforts for air conditioner and refrigerator labeling programs and behavior change communication programs.

Expected outcomes

- Extensive multi-media communications campaigns that leverage the existing communication campaigns.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget (USD)	Estimated Time
Scope and launch campaigns	▪ Led by SON or consultant	Medium-High	$20,000-50,000	1-3 months
Consult stakeholders	▪ Led by SON ▪ All ICS and related cookstove stakeholders	Medium-High	Staff time; $2000-$5000 per meeting	Ongoing

-

2-F. Create compliance scheme and build capacity

- Design a compliance scheme and create a plan, with considerable input from key stakeholders, or other experienced compliance, anti-counterfeiting, or consumer protection entity.
- Explore low-resource-intensive options for monitoring, verifying, and enforcing use of the label. Consider the following options:
    - Industry self-policing, streamlined with a website or hotline for sending tips/notices of non-compliance.
    - Product database or registry accessible to public for product reference. SON already has an electronic product registration system, and adding cookstove products to this system could be a low-cost option.
    - SMS-based consumer verification of products (use QR codes if/when available).
    - Annual audit of registered products, which can include verification testing.

Rationale

Given the voluntary nature of the program, the program owner can hold program participants accountable (e.g. by signing a contract and accepting the rules and consequences of non-compliance with the program, and by conducting post-market surveillance checks on the registered products), but not counterfeiters outside the program without leveraging intellectual property and/or consumer protection laws. In the longer term, as the program gains more attention and provides increasing value to participating companies, more stringent compliance mechanisms may be necessary, such as post-market verification (i.e. sampling and testing products from the market) and enforcement.

A product registry or certification database and process can reduce the need for post-market verification and other resource-intensive compliance efforts because products are tested up front and made publicly available to consumers and other buyers.

Expected outcomes

- Final compliance plan
- Buy-in from stakeholders

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Finalize compliance strategy and plans	▪ Led by SON ▪ Anti-counterfeit specialist or consumer protection organization	Medium-High	Staff time	1-3 months
Add cookstove to the existing product registration database in Nigeria	▪ Led by SON	Medium	Staff time; $5,000-$10000 for additional hardware or software	1-3 months
Consult stakeholders	▪ Led by owner ▪ All ICS and related cookstove stakeholders	Medium-High	Staff time	When

2-G. Evaluate program

Program evaluations attempt to quantify impacts and benefits of an S&L program. Plan program evaluation during the early stages of program development or immediately after (instead of waiting to think about evaluating a program years after inception). Program evaluation can take multiple forms, and if resources are limited, conduct a qualitative assessment or simply monitored and assess the program against its pre-determined activities and targets.

Rationale

Program evaluations can provide justification for the program and its allocated resources. In addition, it can expose any weaknesses or opportunities to improve the program or regulation's efficacy.

An evaluation of a cookstoves labeling program could have global benefits because few, if any, such evaluations of such programs exist. Lessons learned could benefits hundreds of millions of cookstove users under any similar programs that are implemented in the future.

Expected outcomes

- Program monitoring plan and program assessment.
- Evidence to justify the continued implementation of label program.
- Industry and consumer confidence in the program.
- Potential information to improve the impact of the program.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Monitor and evaluate program	▪ Led by owner or consultant	Medium-High	Staff time	Ongoing

3. Develop and implement a tax incentive program

Incentive programs are a very effective mechanism to attract manufacturers and distributors to participate in voluntary programs. Tax incentives are well-suited for Nigeria because the majority of cookstove manufacturers and distributors import either parts or whole units of improved cookstoves from overseas. High tax tariffs become a key contributor to the high retail price for ICS. Therefore, tax incentives for products that can meet a certain performance level in the S&L program can encourage the participation of manufacturers or distributors and lower the retail price of eligible ICS. The following steps are recommended in order to carry out a tax incentive program:

Step 1: The Inter-Ministerial Steering Committee engages government agencies relevant to tax reduction, most likely the Federal Ministry of Finance and Nigeria Customs Services; The Steering Committee in collaboration with the Federal Ministry of Finance and Nigeria Customs Services should review existing tax incentives for similar products (for example solar panels or solar lanterns) and explore the potential regulatory pathways for tax incentives.

Step 2: If the Steering Committee, the Federal Ministry of Finance, Nigeria Customs Services and other relevant agencies agree that tax incentives are a viable option, the Steering Committee will assign a lead agency (potentially an agency within the Federal Ministry of Finance) to carry out impact assessment on tax revenues for tax incentive programs. The assigned agency, with the support from SON, will provide recommendations on the eligibility for tax incentive based on product performance, and suitable level for incentives.

Step 3: Carry out a pilot tax incentive program, evaluate outcomes, and make necessary adjustment to the program. The pilot program can be carried out in a set period of time (e.g. six months or one year) and on a case-by-case basis for manufacturers/distributors who participated in the S&L program.

Step 4: Evaluate the pilot tax incentive program and determine whether to extend the program, adjust incentive levels, or adjust eligibility requirements.

Rationale

- Almost all ICS distributor/manufacturer import whole units or parts from overseas;
- Import duties are too high, resulting in high retail prices for ICS;
- Reducing import taxes will lower ICS prices and make ICS more competitive compared to traditional stoves.

Expected outcomes

- Impact assessment.
- Tax incentive for ICS importers/manufacturers/distributors.

Activity / Intervention	Involved Parties	Potential for Success	Estimated Budget	Time
Explore possibility of tax incentives for cookstoves	▪ Steering Committee ▪ The Federal Ministry of Finance ▪ Nigeria Customs Services	Medium	Staff time	2-4 months

Impact assessment of tax incentives	▪ SON ▪ External experts or consultants	Medium	$20000-$50000	3-6 months
Implement pilot tax incentives, and carry out program evaluation	▪ SON ▪ Nigeria Customs Services ▪ Testing facilities ▪ Manufacturers or distributors	Medium	Staff time	6-12 months
Evaluate incentive programs and determine whether to expand and extend the program	▪ SON ▪ Nigeria Customs Services ▪ Testing facilities ▪ Manufacturers or distributors	Medium	Staff time; Testing cost	Ongoing

6. Complementary and Future Market Transformation Considerations

In addition to the S&L policies and programs detailed above, complementary recommendations and market transformation programs can be considered in Nigeria.

Nigerian Quality Award Scheme (NQA)

One potential complementary program for cookstoves is to include cookstoves as a product category in the existing SON Nigerian Quality Awards, which will likely to encourage ICS manufacturers to participate in the proposed S&L programs. The criteria for the award can be based on the labelling programs proposed in this strategy document.

The existing Nigerian Quality Awards is a voluntary award scheme to recognize and reward exceptional product performance. The award criteria are based on a combination of the outcome of analysis of factory samples, market samples, sector based index analysis and quality management process analysis. The winners of the award will be invited to participate in grand ceremony where with the presentation of certificates and plaques. The winners will be allowed to use the award logo for marketing and communication purposes.

Some industry stakeholders expressed that they value the Nigerian Quality Awards program, however, they are concerned that the Awards program is not well known by consumers. If the Nigerian Quality Awards program can enhance its communication effort and increase its appeal to consumers, this awards program could be used as an incentive for manufacturer to participate in the cookstove S&L program. For example, only manufacturers who participated in the cookstove S&L program are eligible for winning the Nigeria Quality Awards for cookstoves.

Consider Regional Alignment and Coordination Opportunities

Efforts on cookstove S&L are underway in multiple countries, including Kenya, Uganda, Ghana and Nigeria. There is incredible value in learning from others experiences and lessons learned, as well as identifying opportunities for cross-border collaboration where there are common threads or markets. This is particularly important where differences in approaches, regulations, standards and conformance assessment measures pose barriers to the movement of goods from one country to another within the region.

Opportunities for regional alignment and coordination should be considered, and can be easily addressed through study tours, or regional workshops to share experiences. Consider inviting neighboring practitioners and policymakers to participate, network, and/or exchange best practices during an independent workshop or any of the planned S&L stakeholder consultation forums. If successful, this could potentially create a network of S&L policymakers and practitioners across regions to sustain an exchange of ideas and best practices.

Government or NGO procurement programs

Procurement programs usually involve coordinating a large-volume purchase agreement (often by organizing multiple interested parties) for products meeting specific technical performance. These programs encourage supplier to introduce new (usually more ambitious) products by reducing risk through the purchase agreements. It also allows buyers to specify types and performance levels of the products they are willing to buy. Governments and large NGOs interested in ICS can use procurement programs to encourage manufacturers to develop cleaner, more efficient cookstoves. One of the best means to establishing a procurement program and attracting large-volume buyers is an existing quality assurance program that can be easily leveraged.

The voluntary labeling scheme could provide the necessary criteria for a procurement program, for the Nigerian government or international entities, such as the World Bank. The voluntary label and underlying product registry would provide an easy way for buyers to identify clean and efficient cookstoves, as well as a strong network to communicate interest with cookstoves manufacturers and suppliers.

Annex 1: Stakeholders Interviewed

Date	Organizations	Contact
March 1	ICEED and NACC, Abuja	Folake/Precious
	Federal Ministry of Environment, Abuja	Dr. Peter Tarfa
	UNDP - GEF	Etiosa Uyigue
	Energy Commission of Nigeria, Abuja	Ahmed Tijani
Thursday March 2	Federal Ministry of Power, Abuja	Engr. Faruk Yusuf
	Standard Organisation of Nigeria, Abuja	Dr. J. Nicaf
	National Stove Eligibility Laboratory, University of Nigeria, Enugu State	Dr. Cosmos Anyanwu
	Nenu Engineering Ltd, Niger State	Christopher Obi
Friday March 3	D.A.R.E. on Carbon Finance, Kaduna State	Yahaya Ahmed
	SOSAI RE Company Ltd on Carbon Finance, Kaduna State	Habiba Ali
Saturday March 4	National Centre for Energy Efficiency and Conservation (NCEEC) – Akoka , Unilag - Yaba	Prof. Abiola Kehinde
Monday March 6	Toyola – sango ota	Segun Aina
	Zagos Services Ltd – Akowonjo Round about	Kingsley Kanu
	Standard Organisation of Nigeria, Lagos State	Richard Adewumi
Tuesday March 7	Musa Raymond Nig Ltd, Oyo State but meeting in Lagos	Musa Raymond
	SMEFUNDS GEB - Ikeja	Femi Oye
	Nigeria LPG Association – V.I	Dayo Adeshina
	Envirofit – Oba akran Avenue Ikeja	Biodun Olaore
May	Federal Ministry of Environment, Climate Change Department	
	Gas to Health Initiative	
	Techno Oil	
	SON	
	Nigeria Customs Services	
	Nenu	
	Roshan	

Annex 2: Description of Key Stakeholders

Department of Climate Change, the Federal Ministry of Environment (MoE)[10]

Depart of Climate Change under the Federal Ministry of Environment is responsible for advising the climate policies for the Federal Government of Nigeria, and coordinating and implementing activities related to UNFCCC and Kyoto Protocols. The Department of Climate Change is also the focal point for cookstove related projects in Nigeria.

Standard Organization of Nigeria (SON)[11]

SON is the national body for standardization in Nigeria. SON is established by the Standard Organization of Nigeria Act of 2015, and is governed by the Standards Council of Nigeria (the Council), which is comprised of representatives from various federal ministries, academia, industry, and consumer groups. The Council is responsible for designate, establish and approve standards in Nigeria. However, the Council was yet to be established and as such, all standards have to be approved by the Minister of Trade and Investment. The absence of the Council has resulted in a slower rate of standards approvals.

SON's key responsibilities include: 1) Preparation of standards relating to products, measurements, materials and processes among others, and their promotion at the national, regional and international levels; 2) Certification of industrial products; 3) Assistance in the production of quality goods; 4) Improvement of measurement accuracy and circulation of information relating to standards. SON is also responsible for carrying out compliance and enforcement activities in Nigeria.

Energy Commission of Nigeria (ECN)[12]

The Energy Commission of Nigeria (ECN) is responsible for planning and coordinating national energy strategies and policies. ECN is responsible for promoting the diversification and utilization of the energy resources such as solar, wind, biomass and nuclear Energy. ECN can provide technical support for carrying out researches related to cookstove projects.

The Federal Ministry of Power[13]

The Federal Ministry of Power is responsible for setting energy-related policies, including policies such as electricity policies, national renewable policies and action plans, and national energy efficiency action plans. Rural energy access is also part of the mandate of the Ministry of Power. In addition, the Federal Ministry Power serves as the national focal point for the United Nation Sustainable Energy for All (SE4ALL) initiative.

Nigeria Alliance for Clean Cookstoves (NACC)[14]

The Nigerian Alliance for Clean Cookstoves is a local chapter of the Global Alliance for Clean Cookstoves and an initiative by the International Center for Energy, Environment and Development (ICEED). NACC's goal is to "introduce 10 million fuel-efficient stoves to Nigerian homes and institutions by 2021". NACC is

[10] http://climatechange.gov.ng/
[11] http://son.gov.ng/standards-organization-of-nigeria/
[12] http://www.energy.gov.ng/
[13] http://www.pwh.gov.ng/
[14] http://nigeriacleancooking.org/

a public-private partnership, and it seeks to achieve its goals through policy, quality certification, financing and advocacy. NACC currently has over 100 members from government agencies, cookstove industries, and civil societies.

International Center for Energy Environment and Development (ICEED) [15]

ICEED is a leading research development center on sustainable energy and climate change, aimed to deliver policy reform, institutional change and market development for the country's emerging low carbon economy. ICEED has extensive experience in managing and implementing clean cookstove projects in Nigeria. In addition, ICEED has previous experiences in other projects on renewable energy, energy efficiency and climate change mitigation and adaptation.

National Centre for Energy Efficiency and Conservation (NCEEC)[16]

National Centre for Energy Efficiency and Conservation (NCEEC), housed by the Faculty of Engineering, University of Lagos, is one of the six research centers under the Energy Commission of Nigeria. NCEEC is responsible for conducting researches in energy efficiency and conservation. The core activities include research, consultancy, developing policy framework, building alliance and partnerships with other organizations, conducting energy audits, raising awareness, training, appliance testing, and implementing renewable energy and energy efficiency projects. NCEEC had previous experience in carrying out awareness raising activities to promote CFL lamps in Nigeria.

Behavioral Change Communication (BCC)

The Behavioral Change Campaign (BCC) led by Africare Nigeria is funded by the Global Alliance for Clean Cookstoves with the goal to increase awareness, adoption and use of LPG cookstoves among households in Nigeria. The campaign uses mass media, radio, TV, print, to create messages that educate consumers, promote usage of LPG, and support community mobilization efforts.

Nigeria Customs Service

Nigeria Customs Service is under the Federal Ministry of Finance and responsible for import tax revenue collection. Nigeria Customs Service will be a key stakeholder and implementer of the proposed cookstove tax incentive program.

National Environmental Standards and Regulations Enforcement Agency (NESREA)

NESREA has responsibility for the protection and development of the environment, biodiversity conservation and sustainable development of Nigeria's natural resources in general and environmental technology including coordination and liaison with relevant stakeholders within and outside Nigeria on matters of enforcement of environmental standards, regulations, rules, laws, policies and guidelines. NESREA needs to be involved and kept informed for the cookstove S&L program, since the transition towards cleaner cookstoves will alleviate the deforestation challenges and help protecting the environment, natural resources and biodiversity of Nigeria.

[15] http://iceednigeria.org/ic/
[16] https://www.nceec.org.ng/about-us/