Africa Energy Efficiency Policy in Emerging Economies Training Week

Appliances and equipment

Nairobi
18-21 March 2024

International Energy Agency

Appliances & Equipment Stream: Wednesday 20 March 2024 (Day 3)

Energy Efficiency of Appliances & Equipment Overview of Day 3

Day 3: Wednesday, 20th March	
9:00 – 9:30	Review Learnings from Day 2 & Data Request *Clara Camarasa, International Energy Agency and Emily McQualter, International Copper Association*
9:30 – 10:30	8. Making it Happen: Introduction to compliance *Melanie Slade, International Energy Agency* *Guest Speaker: Angellah Wekongo, CLASP*
10:30 - 11:00	Coffee and Tea Break
11:00 – 12:30	9. Toolkit: Clean Cooking *Melanie Slade, International Energy Agency* *Guest Speaker: Justine Akumu, Ministry of Energy and Mineral Development, Uganda* Open Discussion
12:30 – 13:30	Lunch
13:30 – 14:30	10. Did it Work? monitoring and evaluating policies and programmes *Charles Michaelis, Strategy Development Solutions*
14:30 – 15:00	Group Exercise
15:00 – 15:30	Coffee and Tea Break
15:30 – 16:30	11. Group Exercise and Presentations *Clara Camarasa, International Energy Agency and Emily McQualter, International Copper Association*
16:30 – 17:00	12. What's Next? *Clara Camarasa, International Energy Agency and Emily McQualter, International Copper Association*

Reflections and learnings

- What have been your main learnings so far?
- What surprised you?
- Are you confused about anything?
- Any reflections you would like to share?

International Energy Agency

Making it Happen: Introduction to Compliance

Melanie Slade, International Energy Agency

Nairobi, 20 March 2024

Key learning outcomes

- Describe compliance
- Understand why is compliance important
- Understand the steps to deter non-compliance
- List the approaches to market surveillance and testing
- Understand how to respond to non-compliance

You've been given $300,000 to improve compliance rates in your S&L programme

How do you go about deciding on the most effective ways to spend this?

How would you spend this?

What is Compliance?

- More than **120 countries** around the world already have **energy efficiency standards and labelling programmes** or are in the process of implementing them.
- These programmes help to keep **consumer bills down**, **improve energy security** and **reduce green house gas emissions**.
- Ensuring compliance with the regulations laid down by efficiency standards and labelling programmes is crucial of delivering a successful programmes.

Key steps for a compliance programme

1. Make it easy for suppliers to comply with the regulation. The rules should be **clear** and it should be **easy to do the right thing** without excessive costs.

2. There needs to be an effective **monitoring, verification and enforcement (MV&E)** process to deter non-compliance.
   - **Monitoring** is ensuring that products sold in store or online are displaying labels correctly.
   - **Verification** involves testing a sample of products to see if they achieve their claimed energy performance in real life.
   - **Enforcement** involves taking appropriate action to penalise supplier that break the rules.

3. People that work on the energy efficiency programmes should be knowledgeable about the programme and understand what suppliers need to do. They should take a helpful approach to support suppliers comply and to fix any issues.

4. Compliance plans and the results of monitoring, verification and enforcement should be published, so suppliers know where they stands. Perceptive compliance benefits consumers, businesses and governments.
   - Consumers get the benefits they expect from the appliances they purchase.
   - Industry understands that competition is fair, that rule breakers will be found out and punished, so they continue to invest in energy efficiency.
   - Governments understand progress and can make improvements to ensure policy effectiveness.

What is Compliance?

- In general, **compliance** means conforming to a rule, such as a policy, standard or law. Regulatory compliance describes the goal that organisations aspire to achieve in their efforts to ensure that they are aware of and take steps to comply with relevant laws, policies, and regulations.

Essential elements of compliance regimes

Question

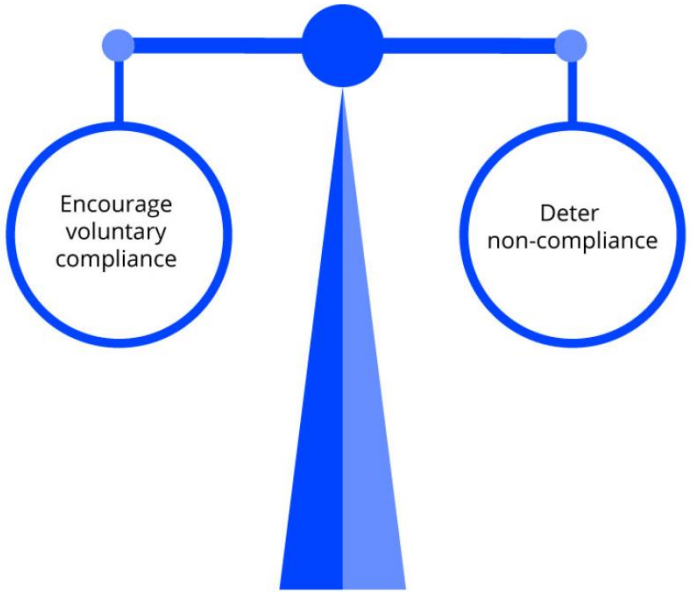
What are some of the ways to increase compliance rates?

What are the options?

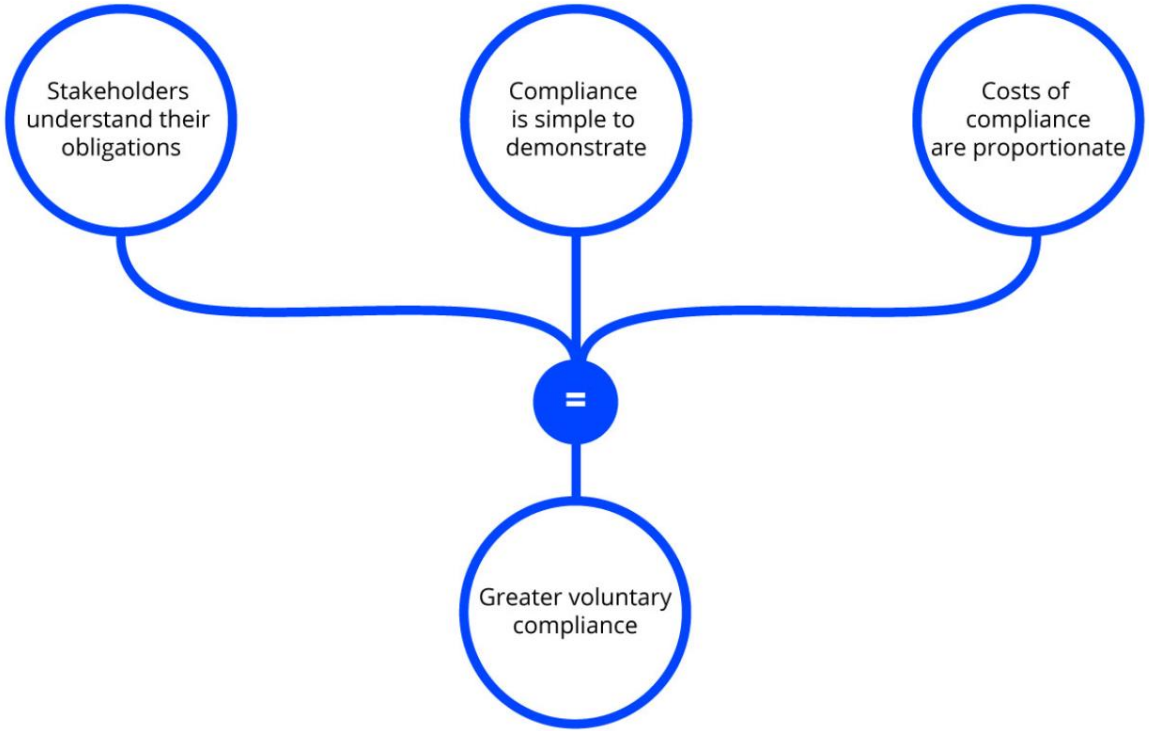
- Test more products
- Build a better laboratory
- Better educate product suppliers
- Publish list of offenders & actions taken
- Inspect more labels in stores
- Improved powers to act (legislation)
- Improve the range of sanctions available
- Publish rules / enforcement policy document
- Make it easier for suppliers to demonstrate/report compliance
- Improve targeting of testing
- Develop in-house manual for staff
- Publish testing targets in advance
- Ensure that enforcement action is taken swiftly
- Add requirements for retailers

Compliance Best Practice

Effective compliance frameworks aim to:



Steps to encourage voluntary compliance



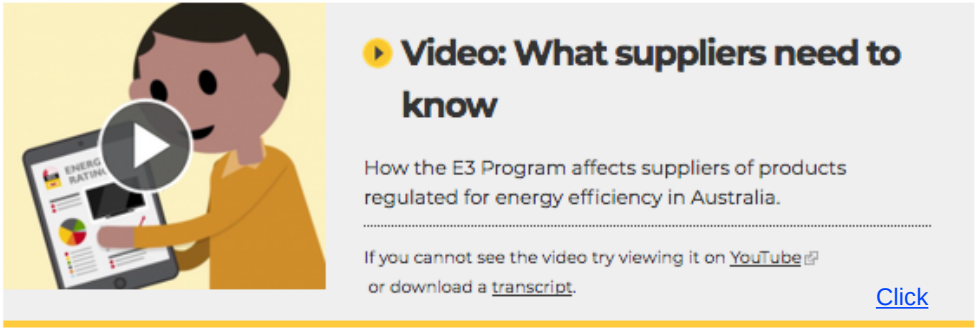
Encouraging Compliance

1. Are the requirements for suppliers and retailers clear and accessible?
2. Are they understandable (not ‘legalese’)
3. Is registration simple and effective, online, including FAQ and guides?
4. Is it clear what documentation is required?
5. Are all the relevant documents relating to compliance clearly identified on the website?
6. Are enforcement procedures and sanctions obvious?
7. Are all staff clear about their roles and responsibilities? e.g. Is there a staff ‘operations manual’?
8. Are you reaching ‘new’ stakeholders as they enter the market

Benefits

- Avoids time-consuming questions to busy staff
- Avoids wasting time on unresolved cases, delayed action

Example: Australia



Steps to deter non-compliance

Deterrence theory:

- *There must be a credible likelihood of detecting violations*
- *Swift, certain, and appropriate sanctions upon detection*
- *A perception among the regulated firms that these detection and sanction elements are present*

1. Increase the risk that instances of non-compliance will be discovered
2. Take corrective action quickly to minimise damage (to all)
3. Make penalties proportional to the extent of transgression but sufficient to be an effective deterrent
4. Ensure corrective action is visible - to deter others

Which is the better deterrent?

VS

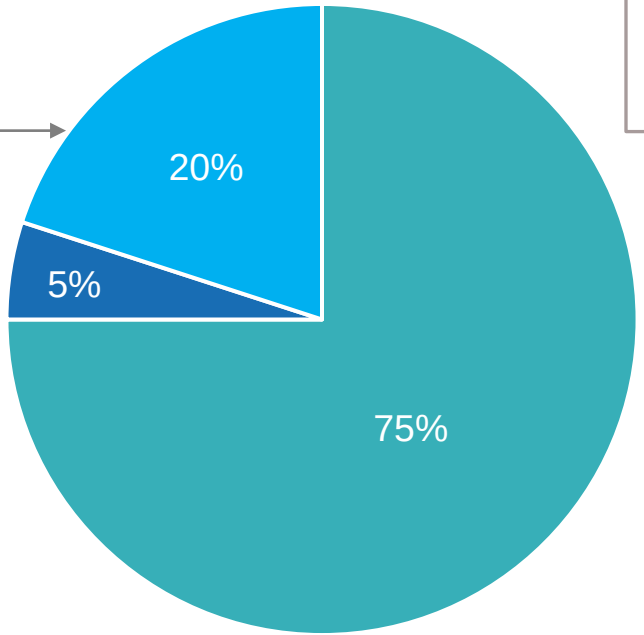
VISIBILITY IS IMPORTANT!

Increase the risk that non-compliance will be discovered

In most regulated markets

20% of the regulated population will automatically comply with any regulation

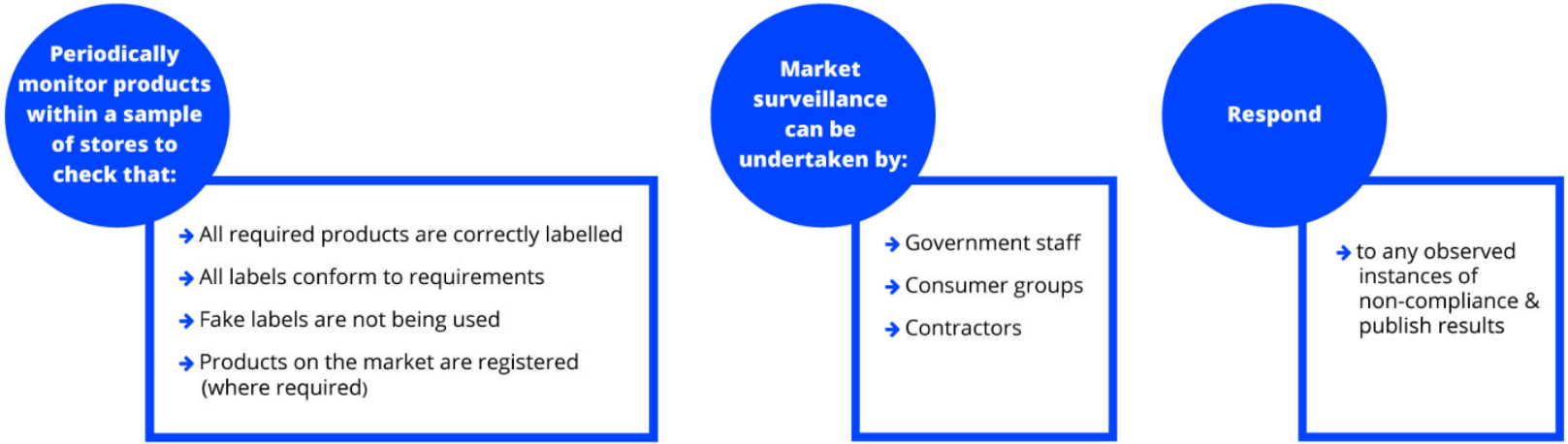
the remaining 75% will comply as long as they think that the 5% will be caught and punished



5% will attempt to evade it

Increase the risk that non-compliance will be discovered

Market Surveillance: labelling display and registration monitoring

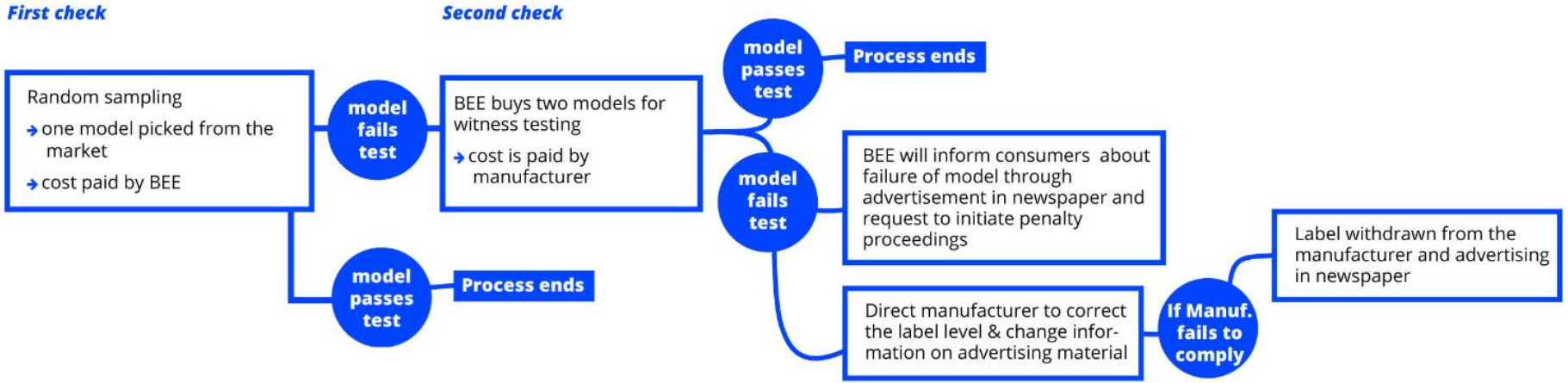


Benefits

- Early detection of labelling errors can avoid more serious non-compliance.
- Demonstrates to suppliers and retailers that government is being vigilant.

Label in Fiji

How to check label compliance? Example from India



Published check testing results – Example from India

Verification testing

Testing is expensive!

Needed, but only worth it if:

- It is done to required level of accuracy
- Is defensible
- Is acted upon

Since you can only test a small proportion on models on the market – how do you increase cost-effectiveness?

- Test products most likely to be non-compliant
- Co-ordinate or share testing with other countries
- Ensure tests are enforceable

Test products most likely to be non-compliant

Random selection represents an inefficient allocation of resources

- End up testing high proportion of compliant products

Identify ‘risk factors’ for products most likely to be non-compliant and have most impact, e.g.

- High market share
- Does the brand have a good record of compliance?
- What is the quality of evidence for claims – is the test lab known and credible?
- Have competitors provided evidence of non-compliance?
- Are the claims of performance excessively high - unbelievable?

Co-ordinate or share testing with other countries

Numerous options to minimise costs and increase effectiveness:

1. Co-ordinate joint market surveillance with neighbouring economies
2. Share results of market surveillance to better target future actions
3. Use quality laboratories in neighbouring economies
4. Commission tests in product country of origin

Example – European surveillance coordination

- Various EU-wide (EU funded) projects
- Industrial and Tertiary Product Testing and Application of Standards (INTAS)

EEPLIANT

- 13 Market Surveillance Authorities (MSAs) from EU
- Organises coordinated MV&E activities, including product testing of LEDs, printers and heaters
- Electronic database allows MSAs to share plans and results of market surveillance activities in confidence
- Publication of Best Practice Guide

Take corrective action quickly to minimise damage

- Any delay in taking corrective actions means non-compliant products remaining in the market
  - More energy savings lost
  - Higher household expenditure

- Most non-compliance can be quickly resolved, with minor enforcement

Make penalties proportional to the extent of transgression

Programmes need a range of enforcement tools to act appropriately and quickly to suspected transgressions to minimise damage

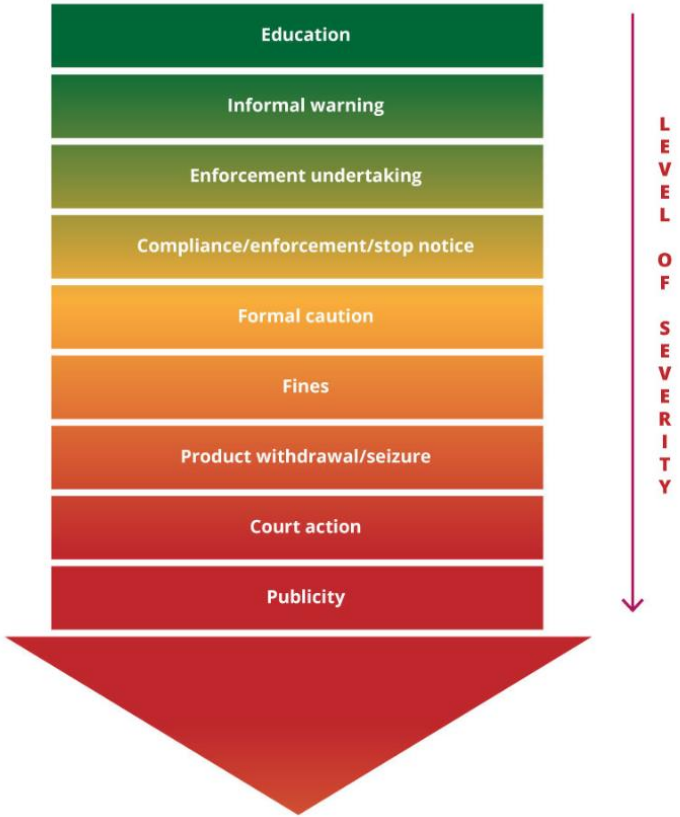
Example - UK response to non-compliance

We operate in accordance with the Regulators' Code, which requires us to:

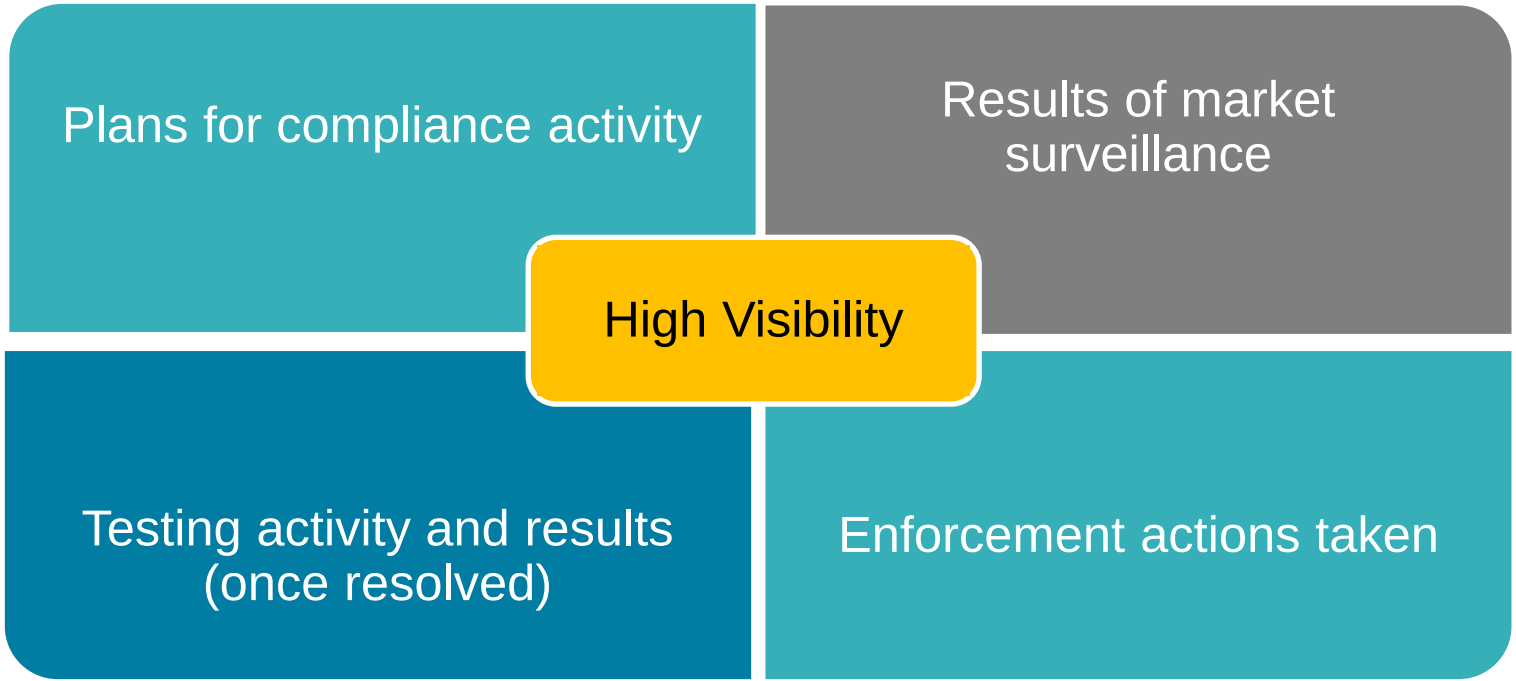
- support compliance and growth
- engage with those we regulate
- base our activity on risk
- share information
- offer clear guidance
- be transparent.

We always act proportionately, depending on the nature of the non-compliance.

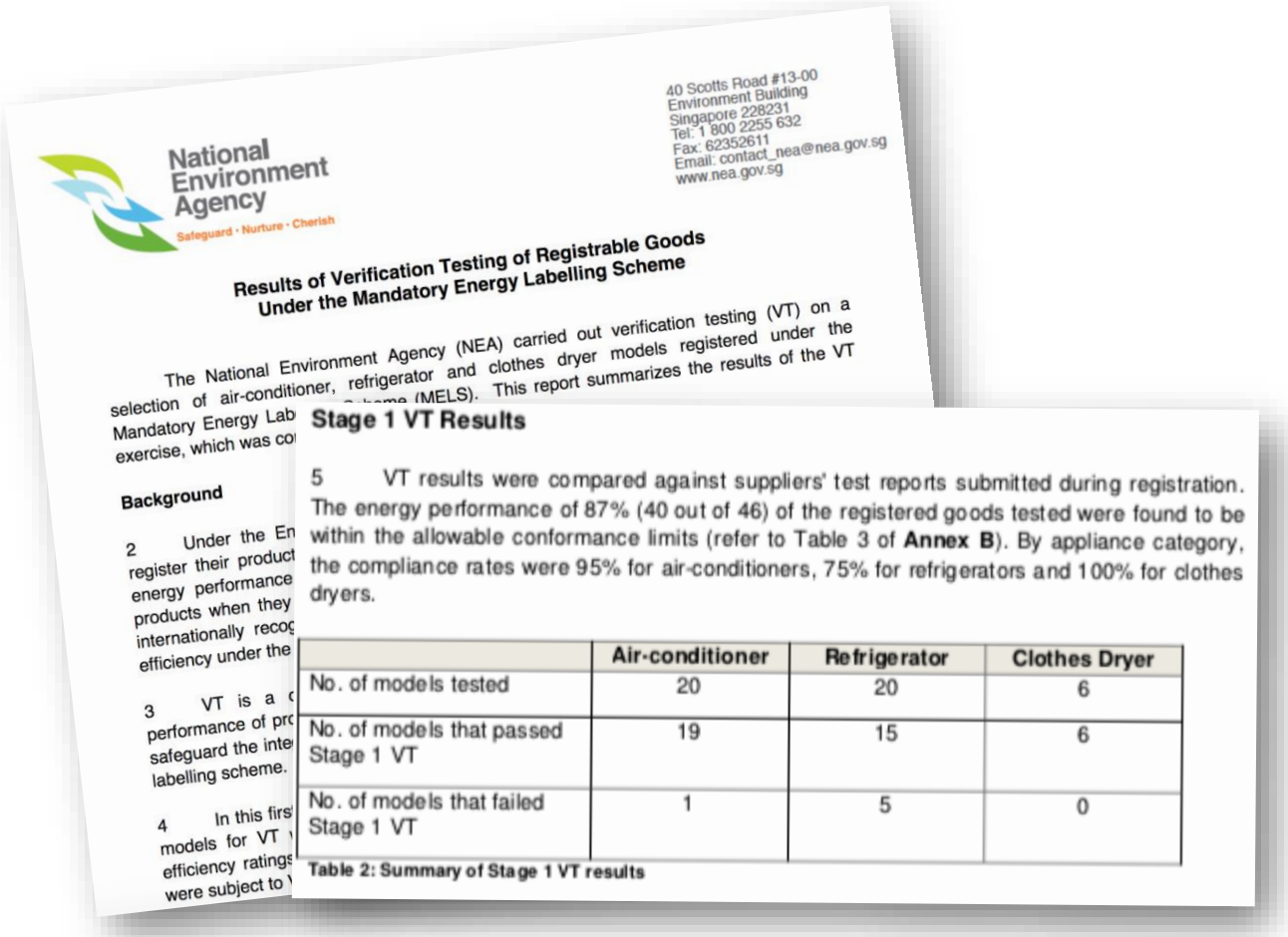
We are approachable and do not take enforcement action just because a business asks us a question or tells us that they have a problem



High visibility surveillance activities



Reporting testing results



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Results of Verification Testing of Registrable Goods Under the Mandatory Energy Labelling Scheme

The National Environment Agency (NEA) carried out verification testing (VT) on a selection of air-conditioner, refrigerator and clothes dryer models registered under the Mandatory Energy Lab… (MELS). This report summarizes the results of the VT exercise, which was co…

Background

2 Under the En… register their product… energy performance… products when they… internationally recog… efficiency under the…

3 VT is a … performance of pro… safeguard the inte… labelling scheme.

4 In this firs… models for VT … efficiency ratings… were subject to …

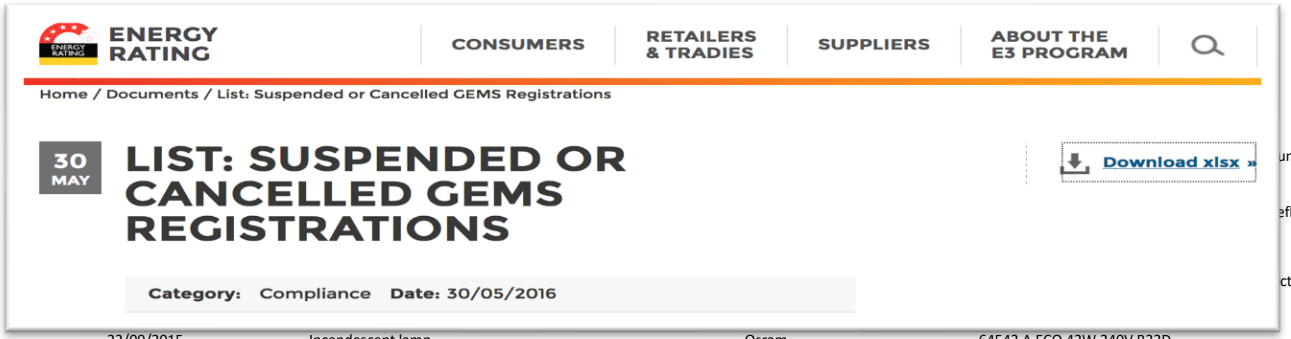
Stage 1 VT Results

5 VT results were compared against suppliers' test reports submitted during registration. The energy performance of 87% (40 out of 46) of the registered goods tested were found to be within the allowable conformance limits (refer to Table 3 of **Annex B**). By appliance category, the compliance rates were 95% for air-conditioners, 75% for refrigerators and 100% for clothes dryers.

	Air-conditioner	Refrigerator	Clothes Dryer
No. of models tested	20	20	6
No. of models that passed Stage 1 VT	19	15	6
No. of models that failed Stage 1 VT	1	5	0

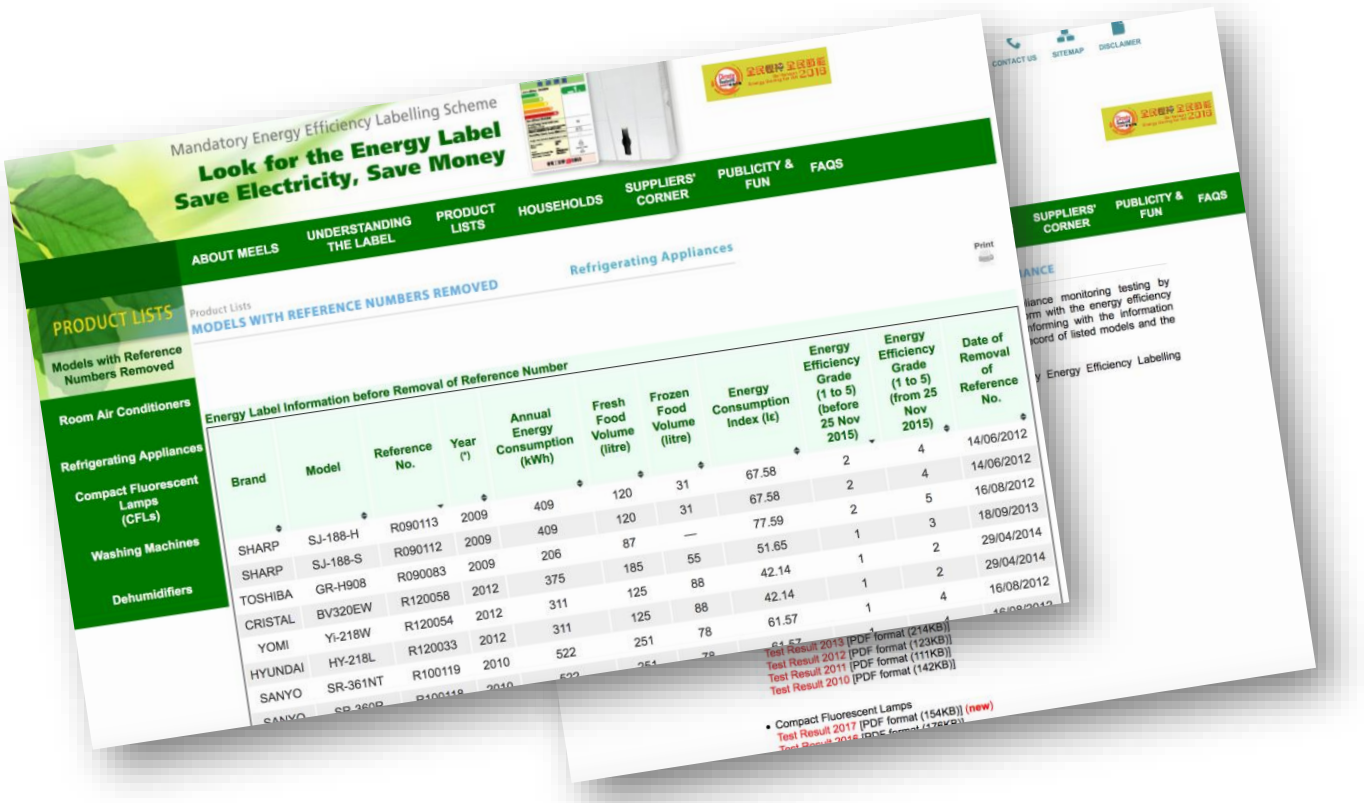
Table 2: Summary of Stage 1 VT results

Reporting enforcement actions



22/09/2015	Incandescent lamp	Osram	64543 A ECO 42W 240V B22D
22/09/2015	Incandescent lamp	Osram	64544 A FR ECO 53W E27
11/09/2015	Self-ballasted compact fluorescent lamp	Olsent	3P414-ES-40K,
17/08/2015	Self-ballasted compact fluorescent lamp	Envirolux	XEU48-15R80 E27 2700K
13/08/2015	Self-ballasted compact fluorescent lamp	Envirolux	XEU48-15R80 E27 4000K
30/07/2015	Self-ballasted compact fluorescent lamp	Olsent	FE-IISB-18W 2700K
30/07/2015	Self-ballasted compact fluorescent lamp	Olsent	FE-AU-15W 2700K
09/07/2015	Self-ballasted compact fluorescent lamp	E-Star	ESSP9W27E27 8w Mini Twist warm white 6500K
26/06/2015	Self-ballasted compact fluorescent lamp	Arlec	FT24
26/06/2015	Self-ballasted compact fluorescent lamp	Osram	Mini Twist 13W/827 E27
11/06/2015	Self-ballasted compact fluorescent lamp	Philips	Ambiance A55 11W WW
18/05/2015	Computer monitor	Philips	284E5Q
05/01/2015	Double-capped fluorescent lamp	NEC	FL30SSEX-N-HG-36 : 30W T8 Tri-Phosphor Natural 5000K

Example: Suspended products Hong Kong



Two types of testing models

	Post-market verification	Third-party certification
Entry conditions	Independent tests, in-house testing, calculation or self declaration	Third-party verification and/or certification
Government/Programme	$$	$
Industry participant	$	$$
Consumers	$	$

Total costs ≈ same

You've been given $300,000 to improve compliance rates in your S&L programme

How do you go about deciding on the most effective ways to spend this?

How would you spend this?

Resources

- Compliance, Technology, and Modern Finance https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2904664
- European Court of Auditors report https://op.europa.eu/webpub/eca/special-reports/eu-energy-labels-1-2020/en/#chapter2
- Scandinavian market surveillance study http://norden.diva-portal.org/smash/get/diva2:859894/FULLTEXT01.pdf
- Accessibility requirements https://www.gov.uk/service-manual/helping-people-to-use-your-service/understanding-wcag
- Information for suppliers in Australia https://www.energyrating.gov.au/suppliers
- Research on compliance with EU ETS https://www.lse.ac.uk/granthaminstitute/news/businesses-from-trusting-countries-are-more-likely-to-comply-with-environmental-regulations/
- Industrial and Tertiary Product Testing and Application of Standards (INTAS) https://intas-testing.eu
- EEPLIANT https://www.prosafe.org/index.php/en/joint-actions/current-actions/eep3
- UK Regulators Code https://www.gov.uk/government/publications/regulators-code
- European Commission report on Ecodesign market surveillance https://ec.europa.eu/docsroom/documents/13924
- Australian report on check testing https://www.energyrating.gov.au/sites/default/files/documents/Report%20-%20Check%20test%20results%20Jul-Dec%2018%20%28002%29.pdf
- Hong Kong Mandatory Energy Efficiency Labelling Scheme https://www.emsd.gov.hk/energylabel/en/about/background2.html

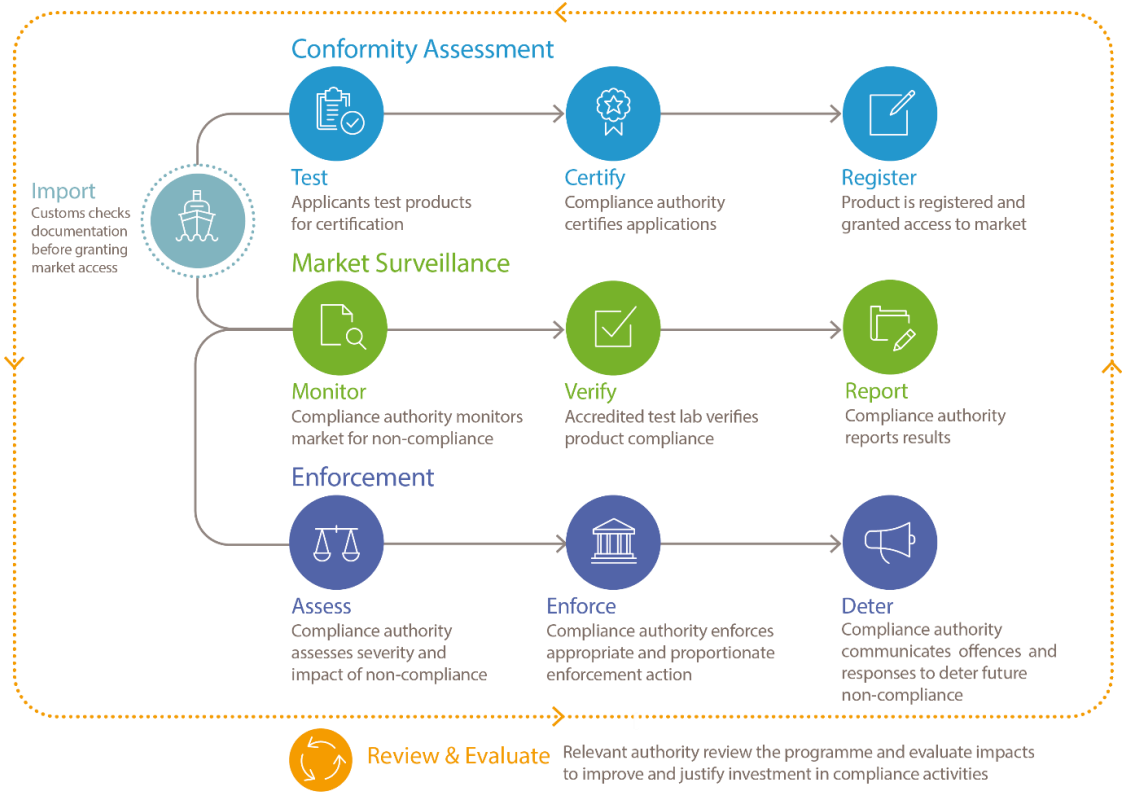
International Energy Agency

COMPLIANCE IN SUB-SAHARA AFRICA

Angellah Wekongo, CLASP

Nairobi, 20th March 2024;

Strategic and holistic approach to compliance



Case Study; Ghana

- Widespread power shortages due to a series of droughts in the **1980s** to the **1990s**
- Residential sector was accounting for approximately **47%** of the total Energy use
- First MEPs and Labels in 2005 ; **Air conditioners and Self ballasted fluorescent lamps**
- Ban of importation and Manufacture of incandescent lamps & used appliances in 2008; **Refrigerating appliances and Air conditioners**
- MEPS and Labels in 2009; **Refrigerating appliances**
- MEPS and Labels in 2017; **LEDs and Self ballasted fluorescent lamps**
- They recently added 17more products

Ministry of Energy

Ghana Standards Authority

Ghana Energy Commission

Other Collaborative

- Ghana Revenue Authority
- Ghana Ports
- Customs Excise and Preventive Services (CEPS)
- Ghana Environmental Protection Agency EPA
- Harbours Authority (GPHA)
- Ghana Police

Case Study; Ghana

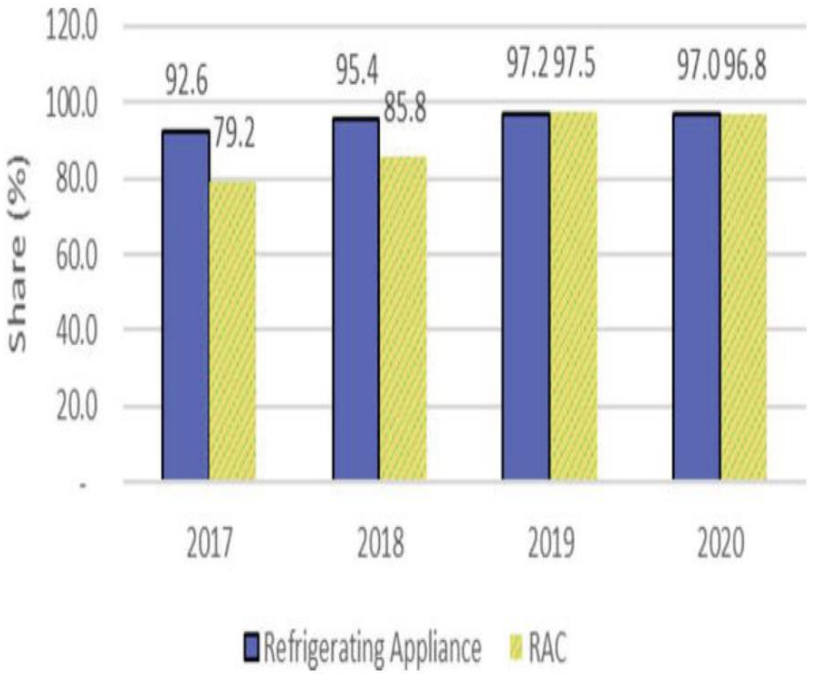
Impact of the MEPS and Labels

- A total of **2.4M** efficient refrigerators were imported into the country between **2013-2020.** About **5845** GWh electricity saved with a corresponding **2.56** million tonnes of CO_2 emission savings.
- A total of **1M** efficient RACs were imported between **2014-2020** . About **1900** GWh electricity saved with a corresponding **783,000** tonnes of CO_2 emission savings

Impact of the Ban

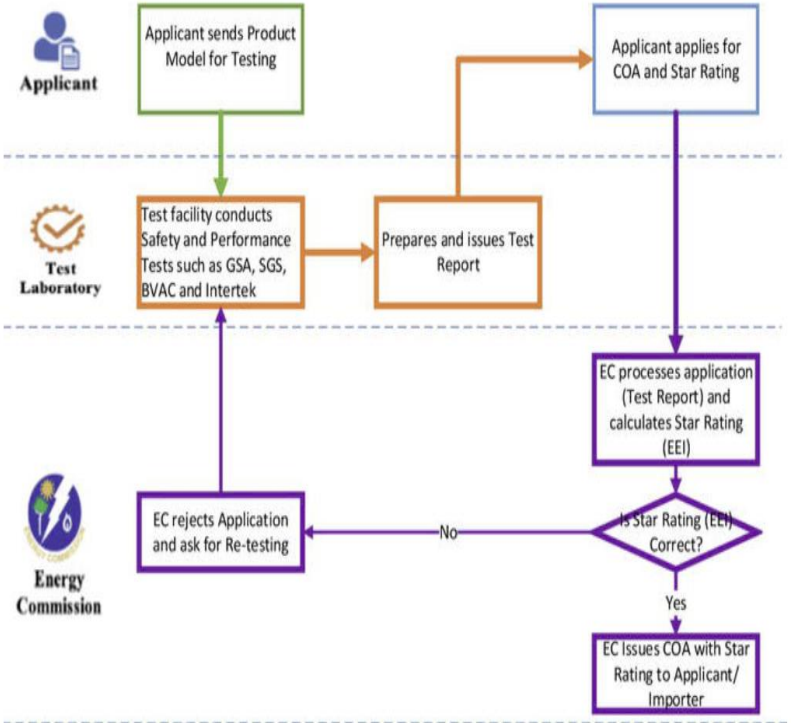
- Prohibition of the importation of approx. **4.9M** units of used refrigerating appliances between **2013-2020.** About **5825.84** GWh of electricity would have been consumed with over **2.33** million tonnes of CO_2 released into the atmosphere if the ban was not enforced

Trends in compliance levels for refrigerating appliances and RACs from 2017 to 2020.

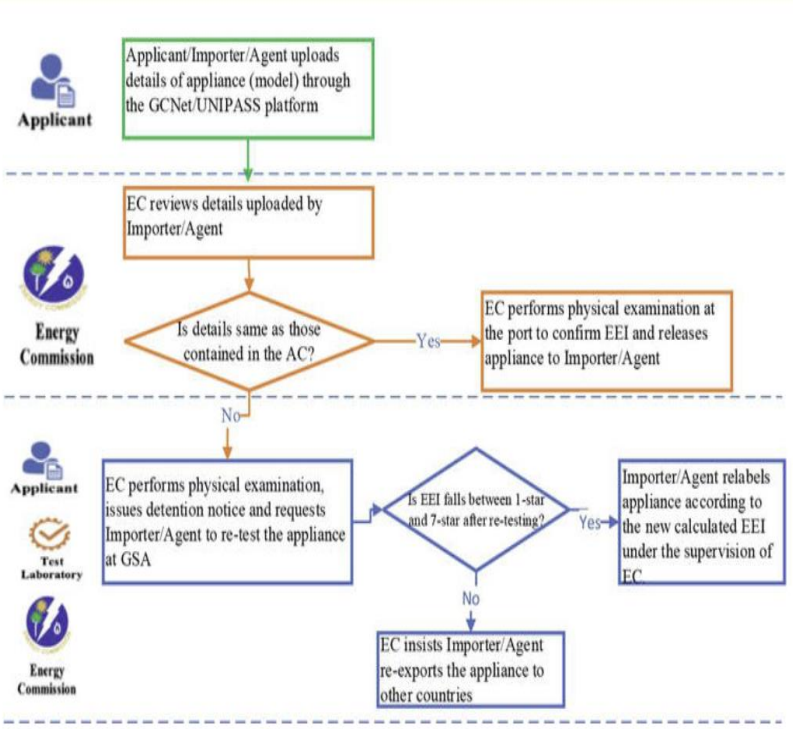


Ghana's Conformity Assessment

Testing and approval processes for model(s) to be imported into Ghana



Physical inspection procedures of a model at the ports of entry



Ghana’s Market Surveillance & Enforcement

1. The Energy Commission undertakes **periodic market surveillance** to inspect appliances sold in the market.

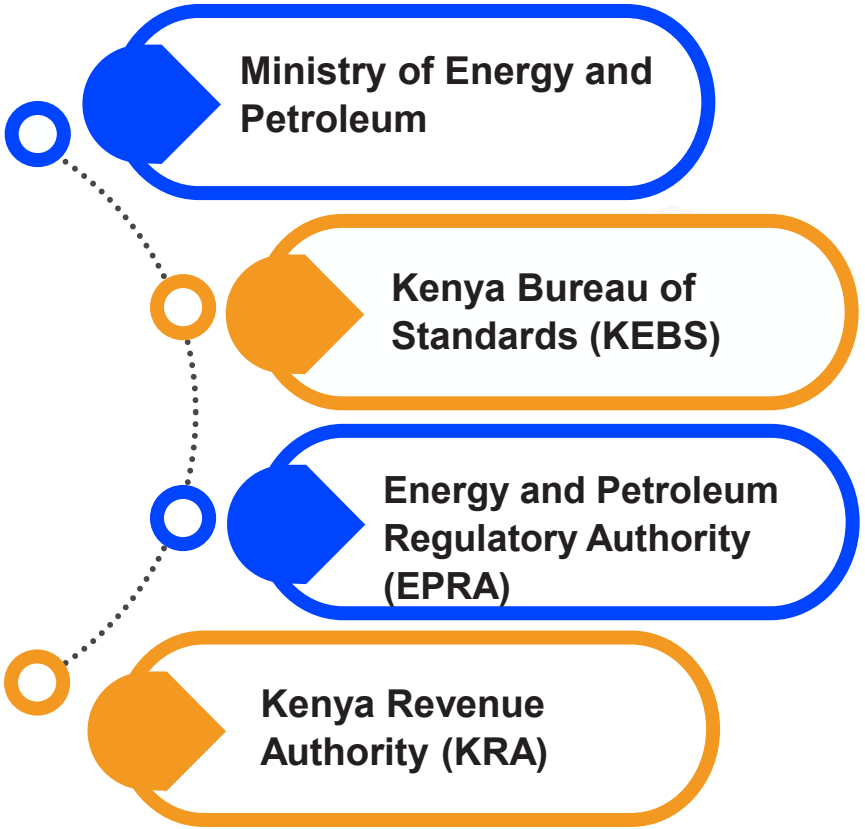
2. Have a **Check list tool** and the app which is called the **certified Appliance App** to track market inspection results and plays a role of PRS

3. **Verification testing** procedures

4. **Removal of non-compliant appliances** from showrooms for testing and re-labelling; including naming and shaming, and re-export, to penalize offenders

Case Study: Kenya

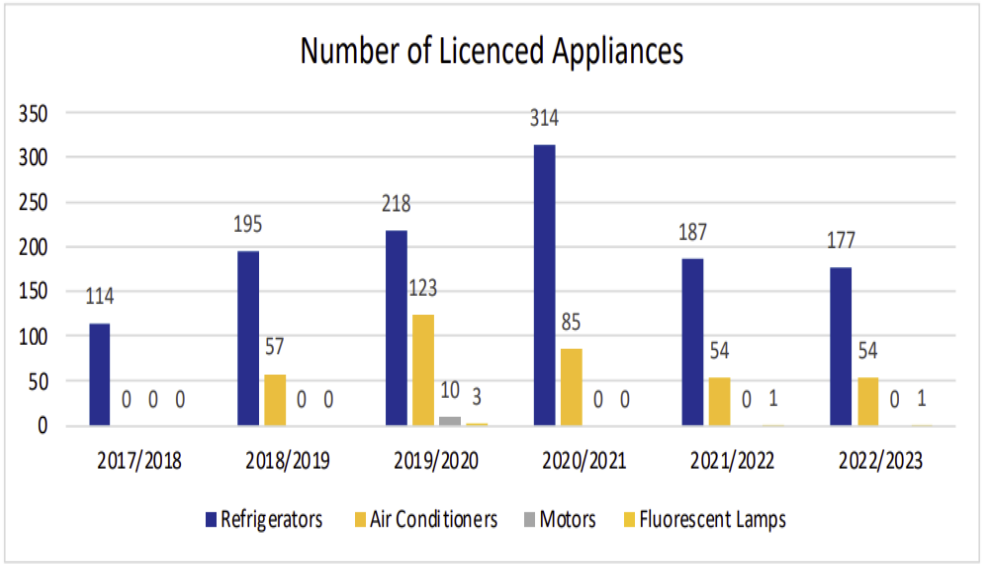
Kenya's first S&L program was introduced in **2016; refrigerating appliances, air conditioners, motors** and **lighting**.



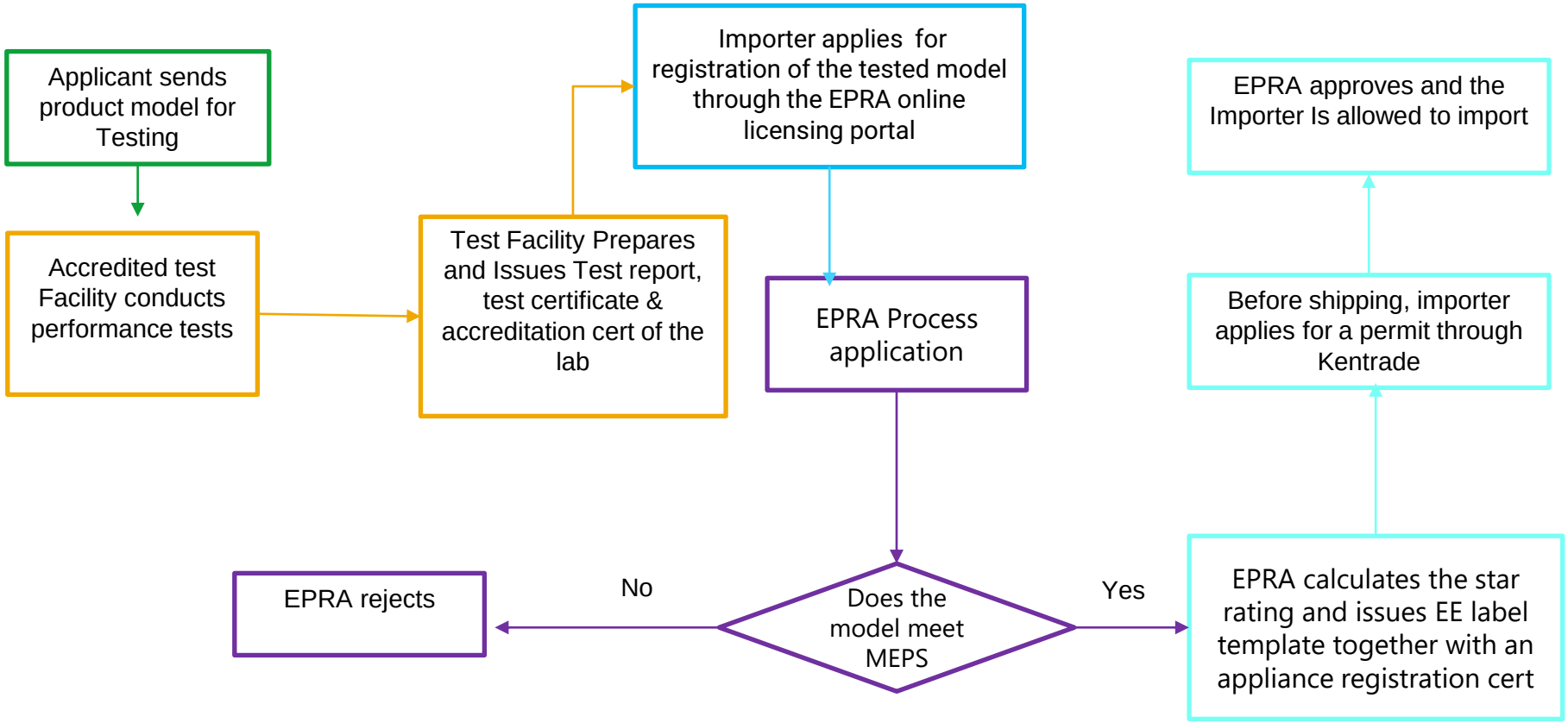
Case Study: Kenya

Impact of the S&L

- The market has responded well to the regulations, with compliance levels for **refrigerators and air conditioners recorded at over 99%**
- However, the compliance for lighting and motors is quite low due to **insufficient verification testing**.



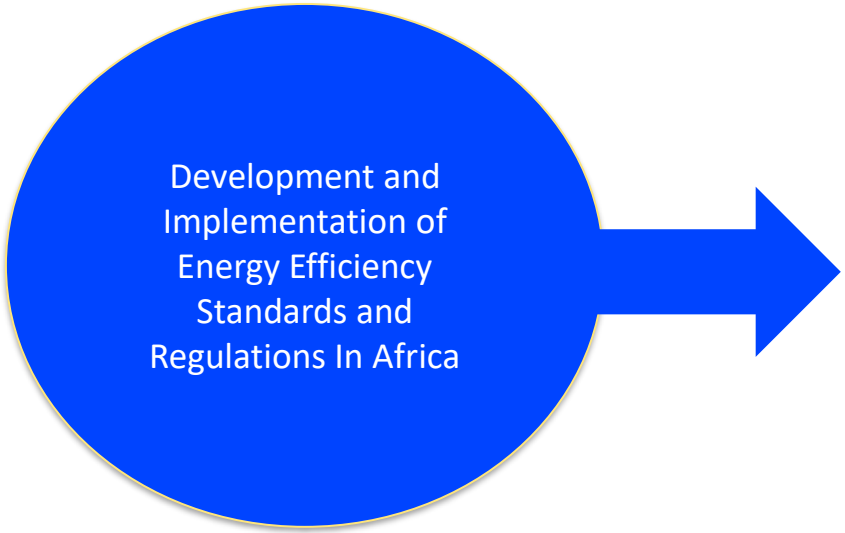
Kenya's Conformity Assessment



Kenya’s Market Surveillance & Enforcement

- EPRA undertakes **periodic market surveillance** to inspect appliances sold in the market
- One window system; Kentrade used as PRS
- Verification and testing procedures
- Noncompliance is minimal eg wrong placement of label,

Status of Compliance in Africa



- Countries in Africa region are at **different levels of policy development and implementation** for Energy Efficiency (EE) policies
- Some Countries have **already adopted EE policies but struggling with the implementation**
- Some have **adopted both EE policies and regulations outlining policy implementation and compliance**; established processes for conformity assessment, market surveillance and enforcement; and built test laboratories for different appliances
- There is a need for a holistic all-encompassing approach to standard and labelling in Africa.

Common barriers hindering successful implementation of EE policies in Africa

- ***Insufficient resources***: financial
- ***Insufficient capacity***: human resources, experience, training
- ***Insufficient capacity or access to test facilities***
- ***Insufficient legal and regulatory frameworks****; Powers to conduct inspections and enforce regulations, inadequate penalties*
- ***Lack of coordination among regulatory agencies***, without which compliance implementation can be ineffective
- ***Lack of collaboration from suppliers***, their unwillingness to share information and hostility towards market inspectors
- **Smuggling and porous borders**

KEY TAKEWAYS

A holistic approach is needed to have a successful compliance program

Infrastructure

- Product registration system
- Testing

Collaboration

- Inter-agency collaboration
- Regional Collaboration
- Harmonization
- MRA-Kenya

Monitoring & Evaluation

Coffee and Tea Break

See you in 30 min!

International Energy Agency

Clean Cooking

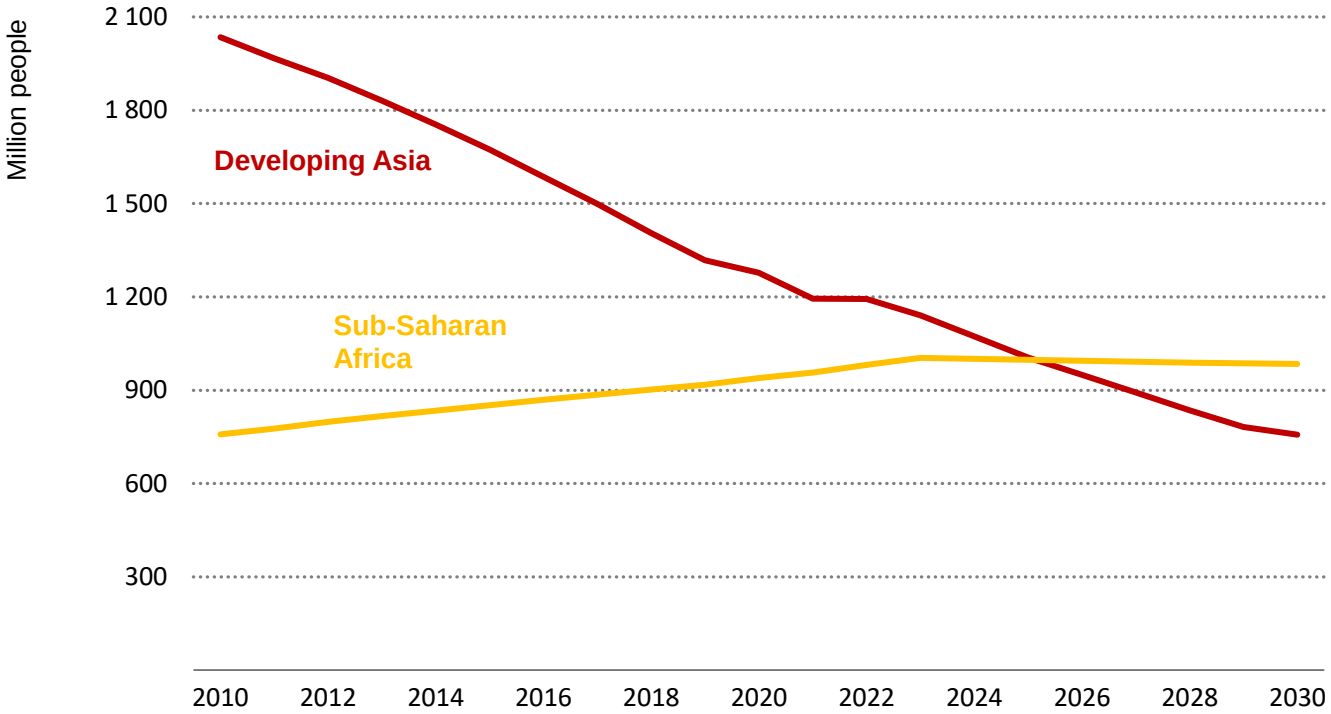
Melanie Slade, International Energy Agency

Nairobi, 20 March 2024

One third of the globe still relies on rudimentary cooking

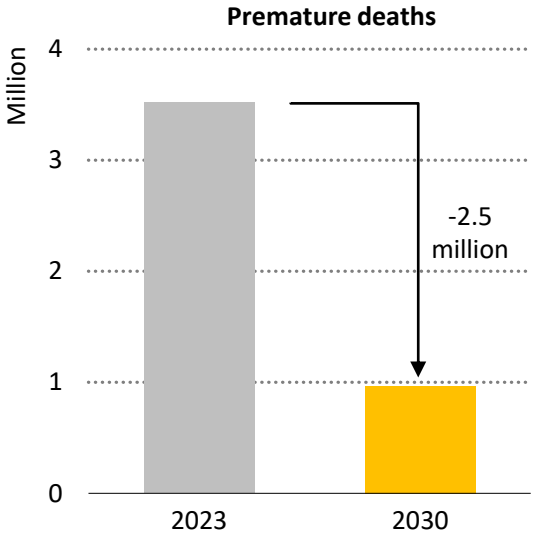
A lack of clean cooking options carries with it a heavy burden on human health, productivity, and gender equity.

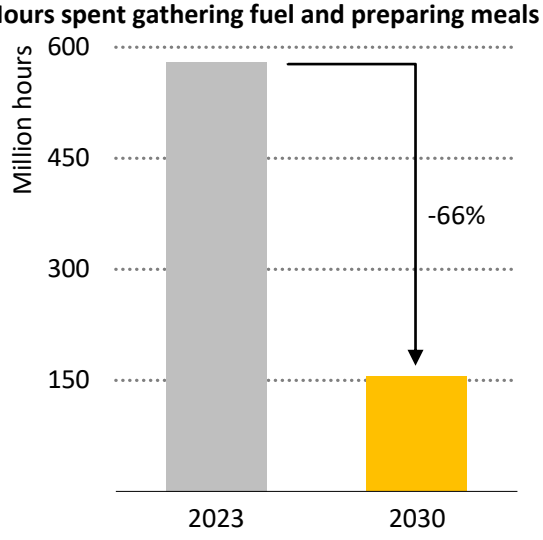
The world remains off track to reach universal access

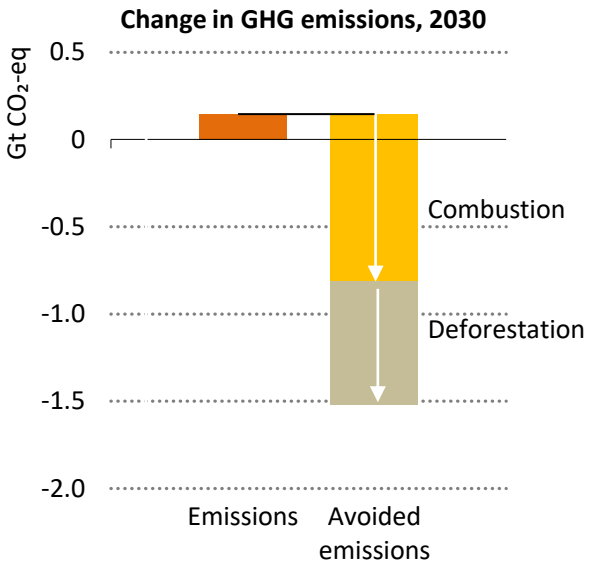


Since 2010, policies in China, India, and Indonesia drove progress, while sub-Saharan Africa lagged behind. With today's policies, most African countries are not expected to reach full access, even in the 2050s.

Reaching universal clean cooking access brings huge benefits







Achieving universal clean cooking access reduces premature deaths, saves time for women to pursue education and work, and decreases global emissions by 1.5 Gt

Resources

- A vision for Clean Cooking Access for All https://www.iea.org/reports/a-vision-for-clean-cooking-access-for-all
- Clean Cooking Alliance https://cleancooking.org/
- MaMa Doing Good https://mama.or.ke/2023/06/18/mama-doing-good-partners-with-university-of-liverpool-and-kemri-to-promote-clean-cooking/
- IEA (2022), Africa Energy Outlook 2022, IEA, Paris https://www.iea.org/reports/africa-energy-outlook-2022, Licence: CC BY 4.0

CLEAN COOKING TOOLKIT

ENERGY EFFICIENCY POLICY TRAINING WORKSHOP

NAIROBI, KENYA

SESSION: APPLIANCES AND EQUIPMENT

By JUSTINE AKUMU
ENERGY OFFICER
Ministry of Energy and Mineral Development
20-03-2024

THE FOCUS ON CLEAN COOKING AND FUELS

- Cooking with traditional biomass fuels (i.e., wood, charcoal, animal dung) on Traditional stoves or an open fire results in:
- 3 times the annual number of deaths compared to HIV/ AIDS -- more than tuberculosis, malaria and HIV/AIDS combined;
- Consumption of 500 million tons of non-renewable wood every year;
- Greenhouse gas emissions equivalent of 170 million passenger vehicles;
- Lost productivity, time and income-generation opportunities for women;
- As much as 30-50% of household incomes being spent on the purchase of cooking fuel;
- Safety and security concerns when people must walk long distances to gather fuel – especially in humanitarian settings where displaced populations are particularly vulnerable to assault and gender-based violence. (Source: USAID, 2017)

CLEAN COOKING AND THE SDGs

Clean cooking is a part of basic services necessary to lead a healthy and productive life and saves household time and money

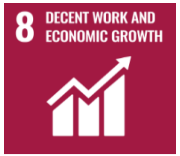
Efficient cooking technologies reduce the amount of fuel needed to cook hence reducing the burden on households that would need to trade to food for energy

Reduced disease burden associated with household air pollution

Children, particularly girls are kept out of school in order to contribute to household chores sich as firewood collection

Unpid work and time lost in fuel wood collection and tending to inefficient cookstoves is a major cause of inequality

Addresses energy poverty and ensures sustainable energy security



Energy access enables enhanced productivity and inclusive economic growth
The clean cooking sector is a source of green jobs

Clean cooking address household and ambient air pollution

Reduced GHG and black carbon emissions.

Reduced harvesttng of non renewable biomass

KEY TRENDS IN CLEAN COOKING

- Global effort towards voluntary International Standards for household and institutional cook stoves;
- Most countries have developed national standards
- A better understanding of the burden of disease attributable to Household Air Pollution and emission reductions are needed
- New partnerships and platforms developed to bolster consumer and enterprise financing
- Improvements in in-country and regionally-based manufacturing capabilities, bringing quality products, at scale, closer to the end user
- The ability of stove projects to receive carbon financing; and

STOVE QUALITY PARAMETERS

- Parameters for standardization of cook stove technologies include:
- Thermal efficiency
- efficiency,
- Total emissions,
- indoor emissions and;
- safety

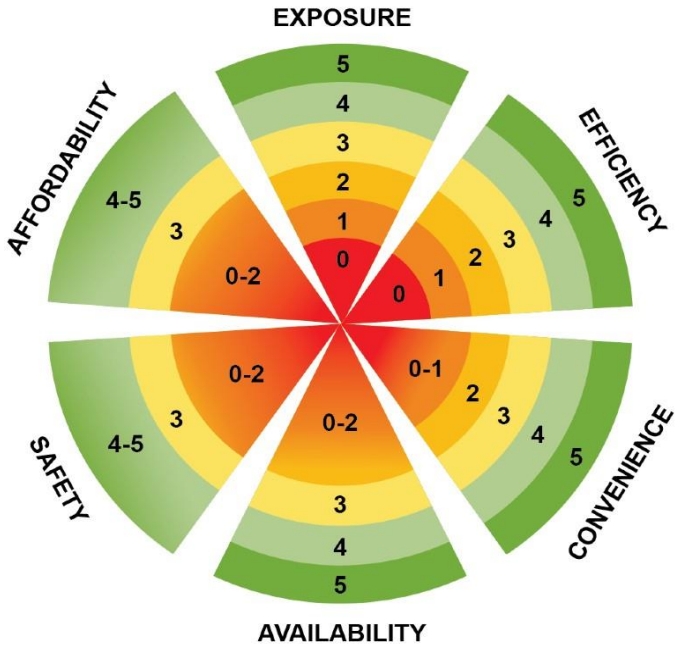
Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
					

ASSESSING COOK STOVE PERFORMANCE

ISO/ IWA tier parameters

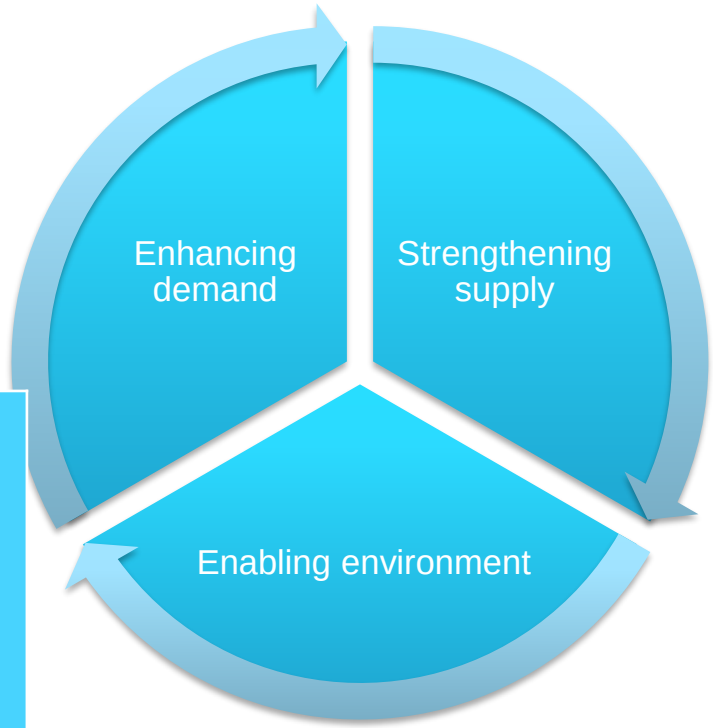
Tier	Thermal efficiency (%)	CO emission factor (g/MJ)	$PM_{2.5}$ emission factor (mg/MJ)	Fire-power (W)
Tier 0	< 15	> 16	> 979	< 500
Tier 1	≥ 15	≤ 16	≤ 979	≥ 500
Tier 2	≥ 25	≤ 11	≤ 386	≥ 750
Tier 3	≥ 35	≤ 9	≤ 168	≥ 1 000
Tier 4	≥ 45	≤ 8	≤ 41	≥ 1 500

World Bank Multi-tier Framework



ACCELERATING CLEAN COOKING ACCESS

Enhancing demand
How well you know the market's primary cooking needs, purchasing power and financing options
- **Consumer preferences**
- **Gender dynamics**



Strengthening supply
- **Are the technologies on the market available to ensure sustainable supply?**
- **Have they been tested by a REPUTABLE lab?**
- **Has the fuel been tested with customers?**
- **Distribution network**
- **Market provision for replacement of parts and O&M**
- **Opportunities to provide income sources for women?**

Enabling environment
- **Regulation on safety, human rights, environmental compliance**
- **Sufficient enforcement capacity**
- **Government market support in physical infrastructure and distribution (e.g LPG and electricity, PPPs in ethanol), testing facilities**
- **Climate and carbon finance, financing mechanisms etc**
- **Incentives such import and VAT tax waivers etc**
- **Labelling and certification of stove appliances**
- **Sector policies and national devt plans**

LABELLING AND CERTIFICATION OF CLEAN COOKSTOVES

- The labelling and certification mechanism is aimed at enabling Ugandan households' transition to cleaner and more efficient stoves and fuels to improve health and reduce environmental impacts.

- promote clean cooking appliances by establishing minimum performance standards based on set criteria.

- Aims to help consumers and project developers identify and choose cook stoves and fuels that minimise the environmental impact, improve indoor air quality, and enhance overall cooking efficiency.

The main principles of the labelling and certification mechanism include:

- Environmental Impact: Reduce carbon emissions, deforestation, and air pollution associated with traditional cooking methods.
- Improving Indoor Air Quality: Ensure that certified cook stoves minimise harmful emissions and particulate matter, improving the health and safety of users.
- Energy Efficiency: Encourage the use of cookstoves that maximise fuel efficiency, reducing the consumption of cooking fuel and saving resources in line with established national standards;
- Safety Standards: Establish safety requirements to mitigate the risk of accidents and promote user safety; and
- Consumer Awareness: Educate consumers about the benefits of certified cookstoves and provide them with easily identifiable labels for informed purchasing decisions.

LABELLING AND CERTIFICATION PROCESS

Standards and Criteria Development:

- Collaborate with industry experts, environmental organizations, and stove manufacturers to establish comprehensive standards and criteria for sustainable cook stoves. This includes emissions reduction, energy efficiency, safety features, and materials used.

- The Ministry, in collaboration with UNBS, has developed national standards for clean cooking appliances and fuels. The standards will be reviewed and updated

Laboratory Testing:

- Independent testing laboratories certified by UNBS will conduct rigorous performance evaluations of cookstoves against the established standards. This includes measuring carbon emissions, indoor air quality, fuel efficiency, and safety.

Certification Levels:

- Cookstoves meeting the established standards will receive certification based on their performance. Different levels of certification will be established to differentiate between various performance tiers.

LABELLING AND BRANDING

- The Ministry, through the Interministerial Committee on Clean Cooking (IMCCC), will develop the criteria required for labelling and certification.
- The IMCCC comprises UNBS, Ministries of Environment, Internal Affairs, Trade, Energy and Finance, and NEMA.
- The IMCCC will be responsible for designing and approving a national comparative label for clean cookstoves and fuels.
- Appliances will obtain this label based on certification and display it based on the certification level/ grade or tier, and key performance indicators.
- This labelling will help consumers identify and compare products in the market. The label will have a QR code for ease of authentication
- Development of the label will take on a process similar to the labels developed for other appliances, such as fridges and lighting appliances

CURRENT LABELS USED IN THE COOKSTOVE INDUSTRY

Incentives to drive clean cooking in Uganda

- Zero tax on solar panels to support solar cooking and biogas tubular digesters
- VAT waiver on LPG and denatured ethanol for cooking (produced from cassava)
- Excise duty and VAT waiver on denatured ethanol
- Zero tax on imports on stove parts for local assembly
- Access to affordable capital for the private sector
- Asset financing
- 10% import tax on stoves for EAC region

Gaps and opportunities for support

- Capacity to package clean cooking programs for climate and carbon financing (understanding and regulating Article 6.2 to scale
- Integrated resource planning for clean cooking
- Support the development of measuring, reporting and verification systems for clean-cooking climate projects
- Support the development of a National Clean Cooking Strategy for Uganda that also speaks to the rural community collecting firewood for free
- Packaging of an ambitious clean cooking program (electricity, biogas and ethanol)
- The need for minimum energy performance standards for clean cooking

Clean Cooking
Open Discussion

Lunch Break

See you in 60 min!

Monitoring and Evaluating Policies and Programmes

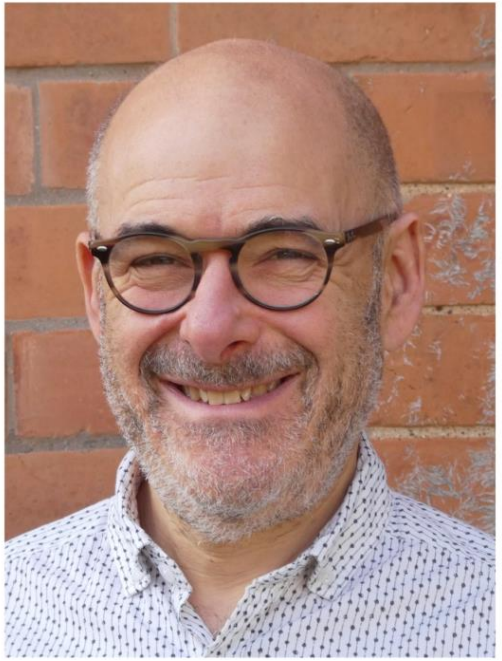
Charles Michaelis, Strategy Development Solutions

Nairobi, 20 March 2024

International Energy Agency

Introductions

- Charles Michaelis
  - From the UK with experience in SE Asia, Africa, China, and Australia
  - Monitoring and evaluation of energy efficiency policies for 30 years
  - Indicators and evaluation helps to deliver better policies with better results for people and the environment
  - Hoping to build understanding of indicators and evaluation to help you in your work in future



Key learning outcomes

- Evaluation should be embedded in the policy process
- Using a Theory of Change helps you to define monitoring indicators and evaluation questions
- The impact of a policy can be assessed using one of three different methods
  - Experimental
  - Statistical
  - Theory based

You are responsible for appliance policy and the Minister has asked for a report on how much energy the policy has saved.

Discussion question: How do you evaluate the effectiveness of your programme?

What is evaluation?

Evaluation is an **objective** process of understanding **how** a policy or programme was implemented, **what** effects it had, for whom and **why.**

Leads to **more effective** policies and programmes

OECD Development Assistance Committee criteria for evaluation

RELEVANCE
is the intervention doing the right things?

EFFECTIVENESS
is the intervention achieving its objectives?

IMPACT
what difference does the intervention make?

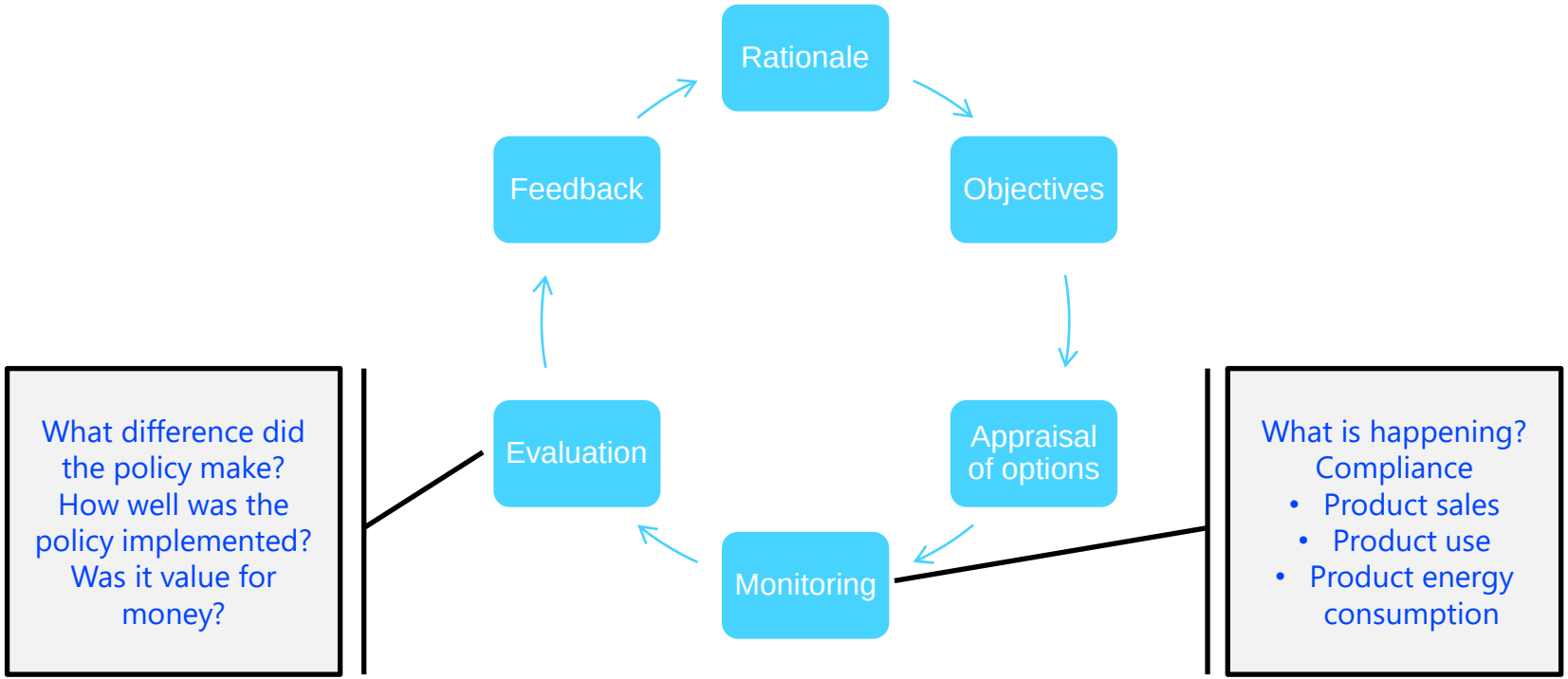
COHERENCE
how well does the intervention fit?

EFFICIENCY
how well are resources being used?

SUSTAINABILITY
will the benefits last?

http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm

Monitoring and evaluation in the policy process



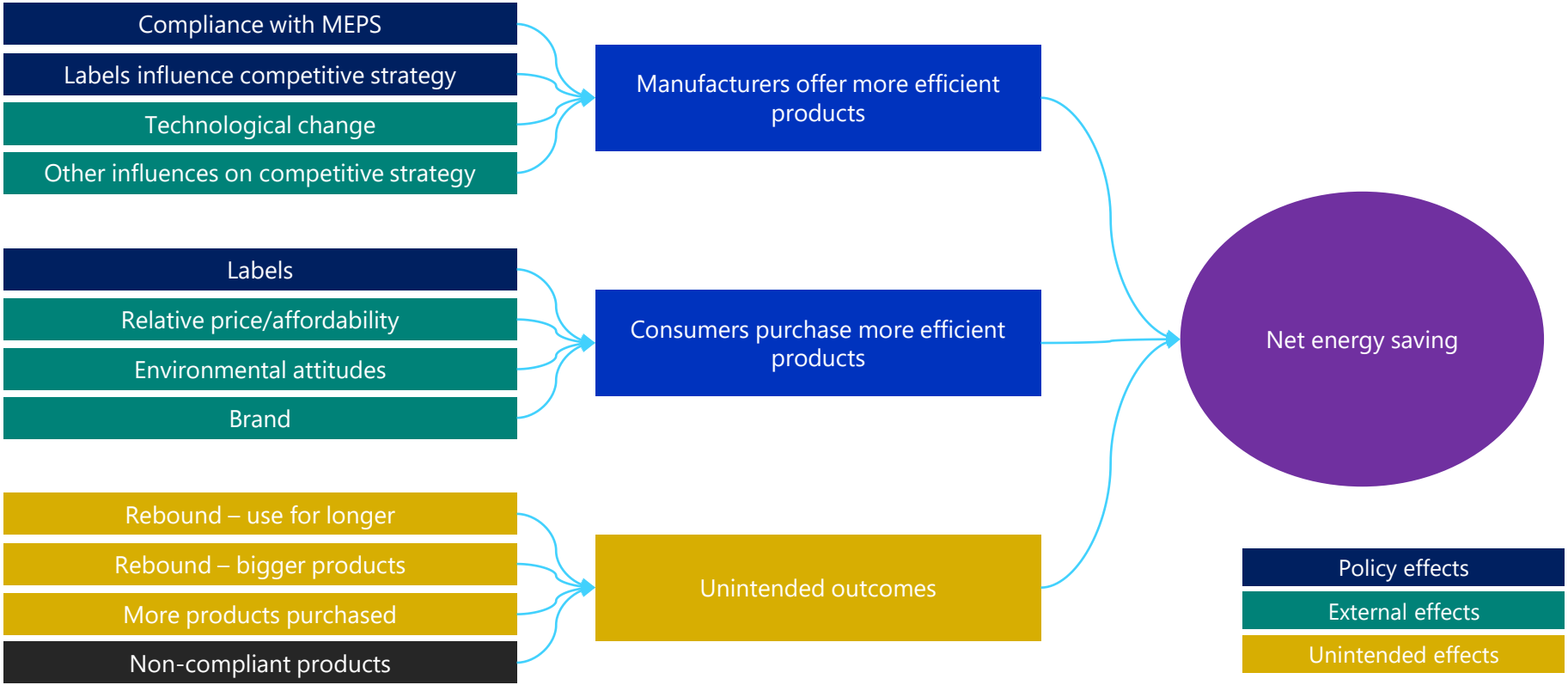
Why is evaluation important?

- Course correction
- Securing investment
- Understanding (multiple) benefits
- Assessing Gender Equality and Social Inclusion implications
- Communicating with stakeholders
- Designing new programmes

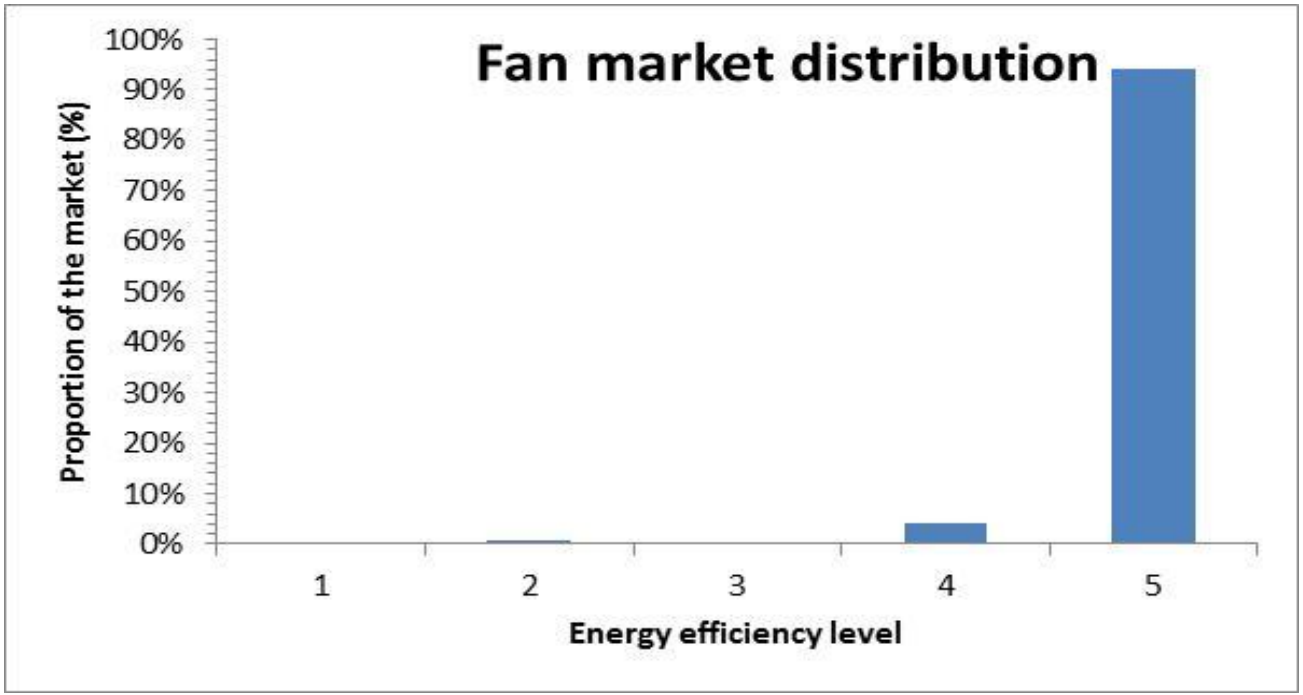
Generic theory of change for MEPS

Input	Activity	Output	Outcome	Impact
Resources used to deliver the programme /policy – time and money	What is done e.g. determine and implement MEPS	What happens as a direct result – inefficient products removed from market	Effect of the change – installed product stock becomes more efficient	Wider effects – reduced energy consumption and CO_2 emissions, multiple benefits

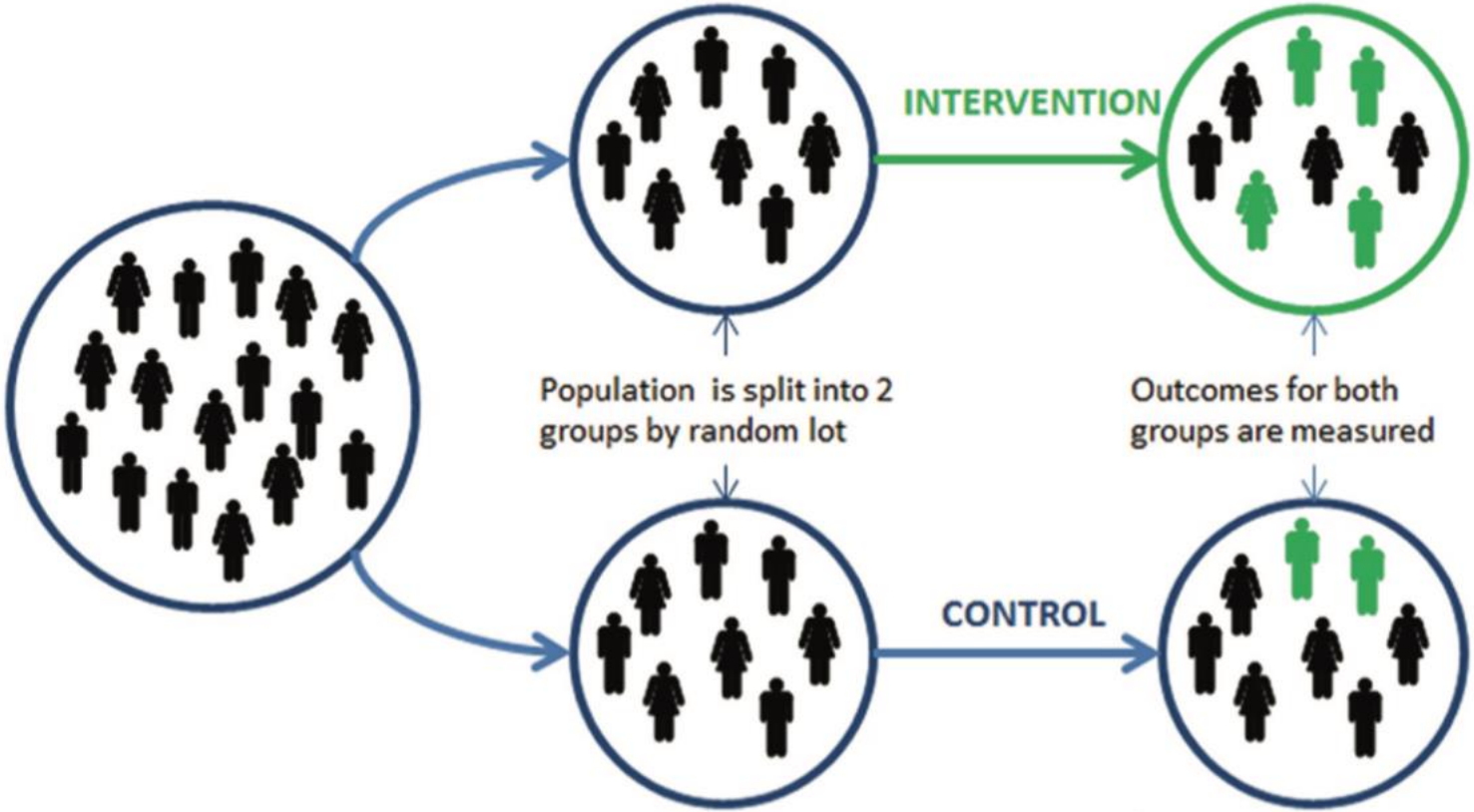
How do appliance policies work?



Could more energy be saved?

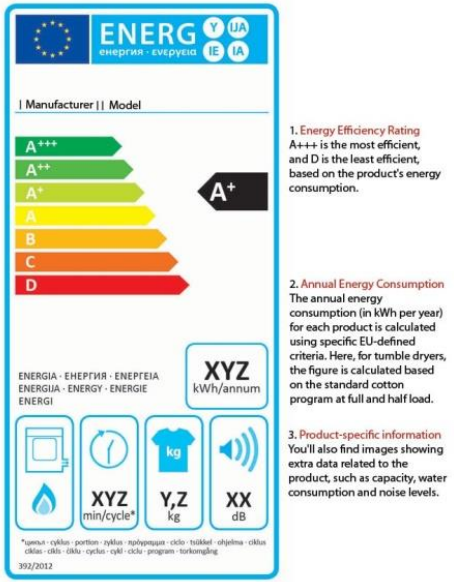


Estimating the effect of energy labels – randomised control trial



Example – randomised control trial

- Test the inclusion of costs on energy label + staff training
- UK Government + John Lewis department store
- Trial group of stores compared to control group
- Small difference for washer dryers, no difference for other products

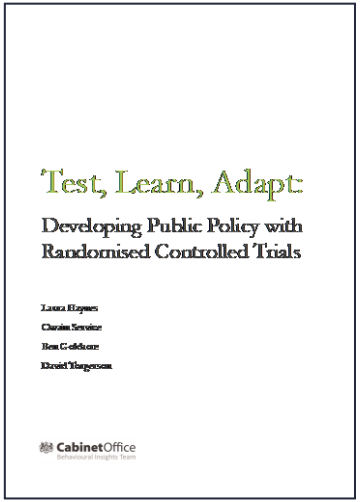


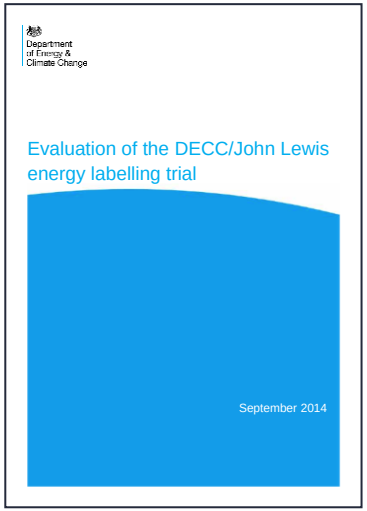
JOHN LEWIS & PARTNERS

Randomised control trial

- Strengths
  - “Prove” effect of policy
  - In the circumstances of the test (when, where)
  - For the indicator being measured

- Weaknesses
  - Doesn’t tell you why the policy worked/doesn’t work
  - Doesn’t tell you if the policy will work in other circumstances
  - Challenging to design and implement





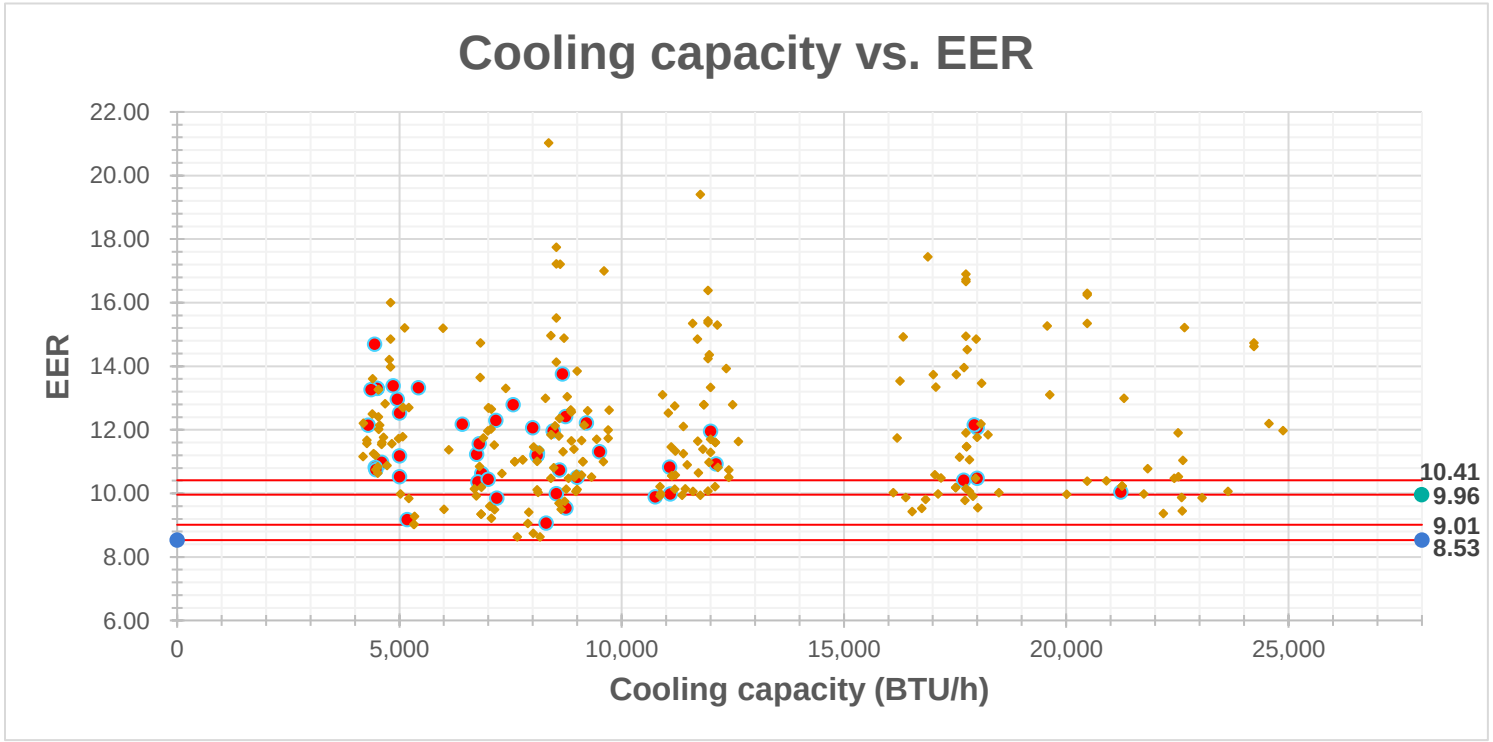
Estimating the effect of energy labels – theory-based

- In theory, labels reduce energy consumption because:
  - Consumers have a reliable way of choosing energy efficient products
  - Manufacturers are motivated to produce more energy efficient products
- But as we have seen there are other causes too.
- Appliance policy is intended to be a contributory cause - one of several necessary or likely necessary factors in a causal package that together brought about or influenced the changes observed.
- Contributory causes can be measured using *Contribution Analysis* which involves
  1. Developing a robust theory of change
  2. Validating the causal narratives using rigorous methods such as...
     - Realist evaluation
     - Process tracing
     - Qualitative Comparative Analysis

Example of theory-based evaluation

- Vietnam Energy Efficiency Labels
  - Implemented for a range of products in 2014
  - Survey of manufacturers found that labels had a:
    - Significant influence on manufacturers of air conditioning and refrigerators
    - Moderate influence on manufacturers of fans, rice cookers and lighting
    - No influence on manufacturers of washing machines and televisions
  - Survey of consumers found that labels influenced 85% of purchases to some extent

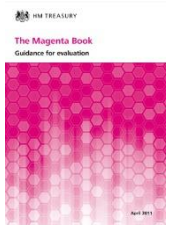
Could more energy be saved?



Useful evaluation resources

BetterEvaluation
Sharing information to improve evaluation

www.betterevaluation.org



https://www.gov.uk/government/publications/the-magenta-book

ENERGY EVALUATION

www.energy-evaluation.org

4E Energy Efficient End-Use Equipment International Energy Agency

https://www.iea-4e.org/wp-content/uploads/2023/03/4E-Energy-Efficiency-Appliance-and-Equipment-Standards-and-Labelling-Programmes-Evaluation-Guidebook-Summary.pdf

https://www.iea-4e.org/wp-content/uploads/publications/2023/03/4E-Energy-Efficiency-Appliance-and-Equipment-Standards-and-Labelling-Programmes-Evaluation-Guidebook.pdf

You are responsible for appliance policy and the Minister has asked for a report on how much energy the policy has saved.

Discussion question: How do you evaluate the effectiveness of your programme?

Group Exercise

Coffee and Tea break

See you in 30 min!

Group Presentations

… and the winner is…

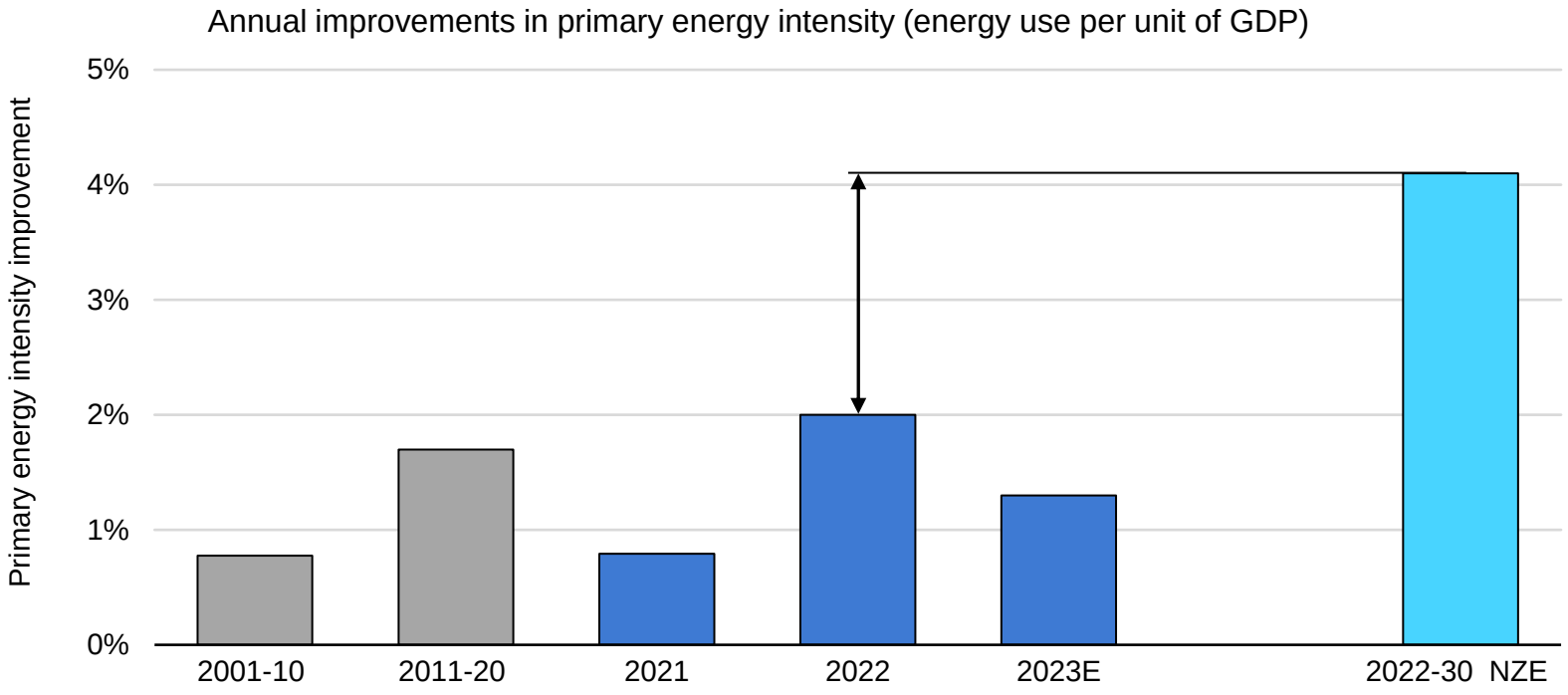
What's Next?
Review & Discussion

Doubling global progress on energy efficiency

COP28 final text:

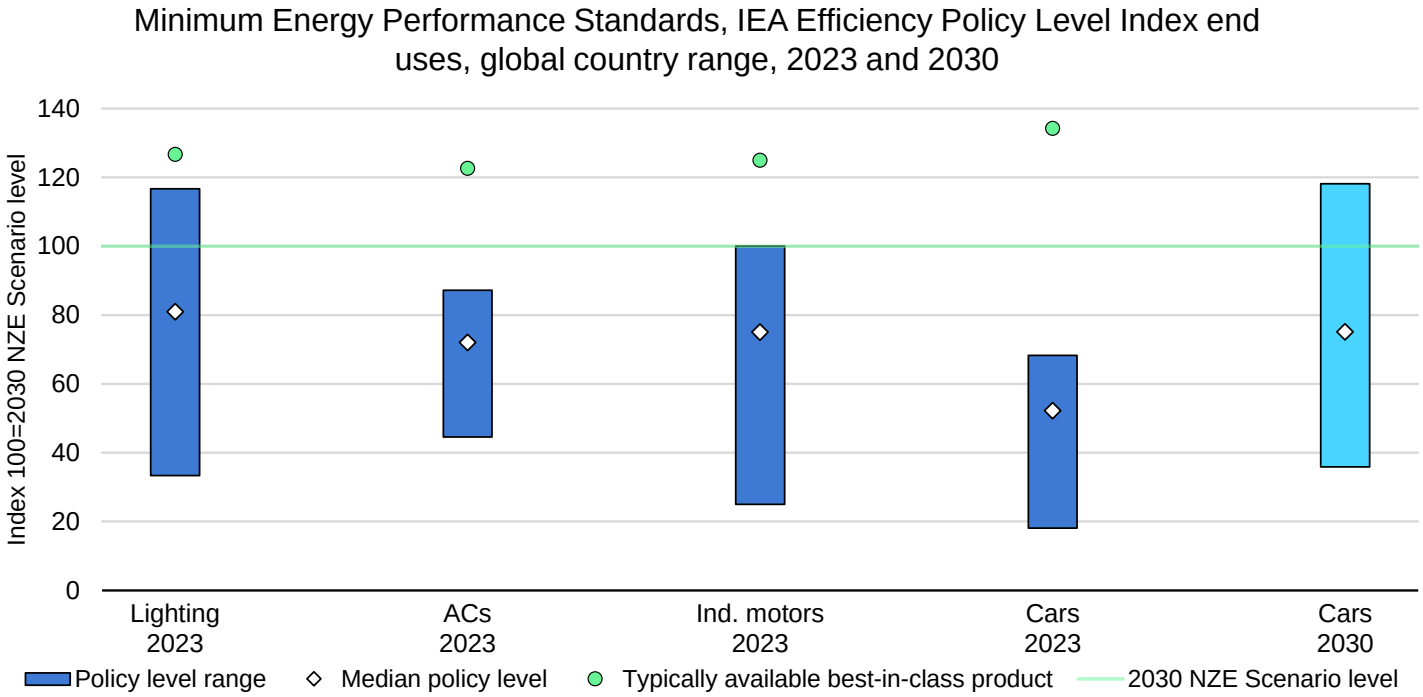
Calls on Parties to contribute to … doubling the global average annual rate of energy efficiency improvements by 2030

What is the doubling goal?



The IEA's Net Zero by 2050 Scenario sees a doubling of annual improvement to 2030

Policies and technologies for doubling already exist



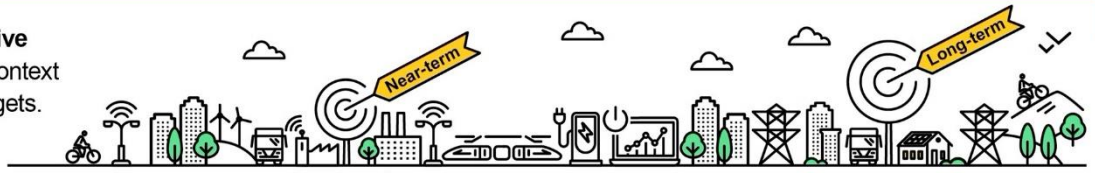
The technologies needed to achieve a doubling already exist, and policy thresholds are rapidly moving towards the required level.

Policy Packages for Energy Efficiency

In all sectors the greatest efficiency gains are achieved by a package of policies that combine three main types of mechanisms: Regulation, information and incentives. Careful design and implementation will deliver efficiency's full potential to enhance energy security, create jobs, increase living standards, cut energy bills and reduce emissions.

Targets

Policies are more effective when they are set in the context of clear strategies and targets.

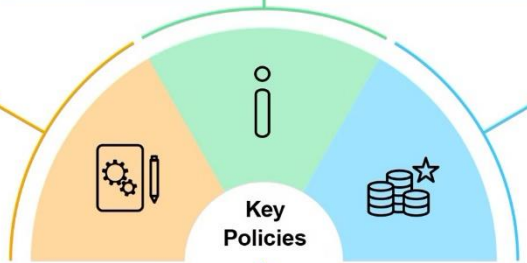


Essential elements

Regulation is essential to exclude the worst performing equipment and practices from the market, to drive average efficiency levels up, and to set rules for measurement of performance.

Information helps people make more efficient choices in what they buy and how they use energy.

Incentives make efficient options more attractive and speed up the upgrade and replacement of appliances, buildings and vehicles. They also encourage the use of new technologies and practices.



Implementation is as important as policy design.

Ensuring that the **resources** are in place to put policies into action.

Address **vital elements** such as capacity building, enforcement, monitoring.

It is important to continually assess **policies and programmes** so as to keep up to date with technology developments.

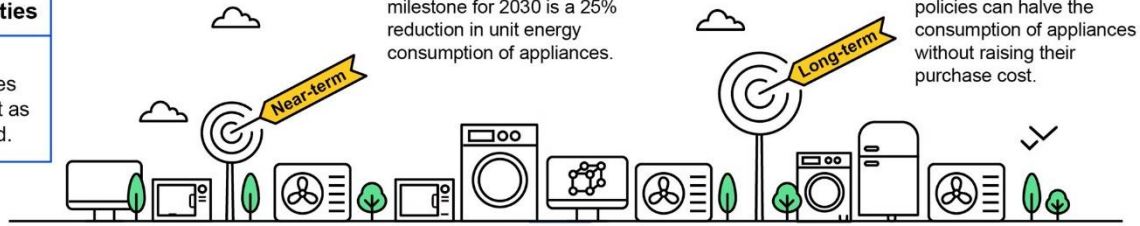
Appliance Energy Efficiency Policy Package

Immediate opportunities

In most markets, it is possible to buy appliances that are twice as efficient as those typically purchased.

The **Net Zero** Scenario milestone for 2030 is a 25% reduction in unit energy consumption of appliances.

Long-term appliance policies can halve the consumption of appliances without raising their purchase cost.



REGULATION

- **Minimum Energy Performance Standards** exclude the least efficient products from the market; they should be in line with international best practice, while reflecting good understanding of local circumstances; and be regularly updated. Regulations are essential for moving the market towards the best available technology in line with achieving net zero targets.
- **Regulation** can ensure that new appliances are "demand response ready" in order to offer flexibility to the end-user and the overall system and reduce peak demand.

INFORMATION

- **Labels** inform consumers, identifying the most efficient appliances and encouraging purchases based on life time costs.
- **High Efficiency Performance Specifications** identify the best performing products and are often used as the basis for labels and incentives.
- **Consumer information campaigns**, help people make informed decisions. These are most effective when based on behavioural insights and targeted strategies.
- **Smart meters** enable feedback and targeted guidance to consumers about their energy use and how they can make savings.

INCENTIVES

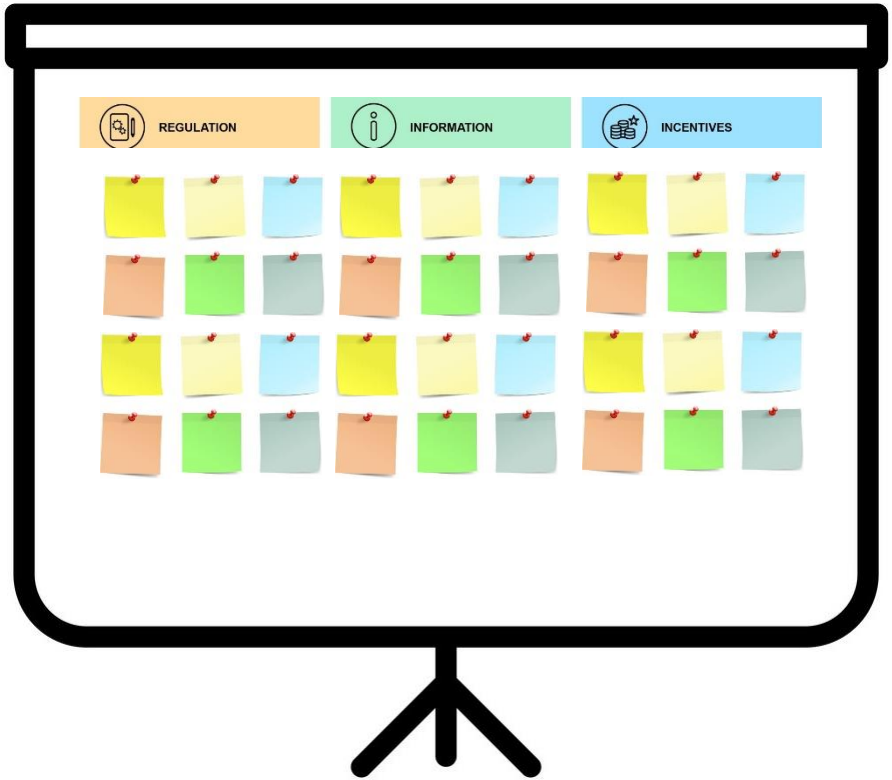
- **Rebates, grants and other financial offers** motivate consumers to buy highly efficient appliances.
- **Finance or taxation benefits** encourage manufacturers to produce appliances that are more efficient.
- **Well-designed procurement processes** can increase market share of highly efficient appliances and drive innovation.
- **Dynamic electricity pricing** helps incentivise flexible demand.

Best Practice Elements of S&L Programmes

Question

- What **2-3 things** have you learnt this week?
- Name two things that you are going to do differently as a result of this training?

Brainstorm Appliance Energy Efficiency Policy Package



!
Focus on immediate steps

Appliance Energy Efficiency Online Training

Link

International Energy Agency

Appliance Energy Efficiency Policy

International Energy Agency

Energy Efficiency Indicators: Fundamentals on Statistics

International Energy Agency

Energy Efficiency Indicators: Essentials for Policy Making

International Energy Agency

Energy Efficiency in Buildings

International Energy Agency

Sustainable Energy Policies for Smart Cities

Contact us: melanie.slade@iea.org, clara.camarasa@iea.org, emily.mcqualter@copperalliance.org

Resources

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Electrical Energy Efficiency (E3)

François Ahoti
Regional Director
IEC AFRC

IEA EE Policy Training
18-21 March 2024
Nairobi - Kenya

IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components

Energy today

Energy generation must be safe & clean

- Increase in awareness of Energy Efficiency & energy efficient products
- Rapid growth of electrical/electronic & ICT technologies
- Many countries introducing policies/regulations to optimize energy usage

IECEE E3 programme

- **A globally standardized approach to test & verify EE for electrical/electronic equipment based on IEC International Standards**
- **Aims to facilitate cross-border mutual recognition of conformity assessment in Energy Efficiency**
- **Hopes to satisfy business, government and consumer needs**
- **Is 3rd party CA service, which will grant Statement of Test Results (STR)**

IECEE E3 programme

- **Aims to prevent testing duplication, reduce costs, support timely global trade**
- **Provides proof of compliance it IEC International Standards in EE by testing:**
- **Energy performance**
- **Energy consumption**
- **Level of noise pollution**

Benefits

- Facilitates easy access to global markets
- Avoids duplication of tests/measurements
- Optimizes costs
- Gives proof of compliance with national regulations

Benefits

- Countries can adopt it as part of their EE programmes
- Supports developing countries protect domestic markets from importing inefficient products
- Contributes to environment protection

Compatible with other key global EE programmes

- Energy rating or labelling including Minimum Energy Performance Standard (MEPS)
- Energy efficient product marking or certification
- Standby power reduction programmes

IECEE E3 testing Standards

Countries worldwide are adopting IEC International Standards to facilitate implementation of their own energy policies and regulations.

IECEE E3 testing Standards

The Standards cover:

- Measuring methods for standby power for household electrical appliances
- Characteristics and test method for refrigeration equipment

IECEE E3 testing Standards

- Method to determine loss & efficiency of three-phase squirrel cage induction motors
- Measuring method for power consumption of audio, video and other associated equipment

Statement of Test Result (STR)

All tests are conducted by an IECEE assessed and registered laboratory under strict supervision of its National Certification Body (NCB)

E3 service online database

- Administered by IECEE Secretariat, Geneva, with test results provided by NCBs
- IECEE publishes a list of registered IECEE NCBs and their issued E3 STRs, available at: www.iecee.org

Thank you
fya@iec.ch

François Ahoti
Regional Director
IEC AFRC

IEA EE Policy Training
18-21 March 2024
Nairobi - Kenya

IEC System of Conformity Assessment Schemes for Electrotechnical Equipment and Components

CLEAN COOKING TOOLKIT

ENERGY EFFICIENCY POLICY TRAINING WORKSHOP

NAIROBI, KENYA

SESSION: APPLIANCES AND EQUIPMENT

By JUSTINE AKUMU
ENERGY OFFICER
Ministry of Energy and Mineral Development
20-03-2024

THE FOCUS ON CLEAN COOKING AND FUELS

- Cooking with traditional biomass fuels (i.e., wood, charcoal, animal dung) on Traditional stoves or an open fire results in:
- 3 times the annual number of deaths compared to HIV/ AIDS -- more than tuberculosis, malaria and HIV/AIDS combined;
- Consumption of 500 million tons of non-renewable wood every year;
- Greenhouse gas emissions equivalent of 170 million passenger vehicles;
- Lost productivity, time and income-generation opportunities for women;
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- Safety and security concerns when people must walk long distances to gather fuel – especially in humanitarian settings where displaced populations are particularly vulnerable to assault and gender-based violence. (Source: USAID, 2017)

CLEAN COOKING AND THE SDGs

Clean cooking is a part of basic services necessary to lead a healthy and productive life and saves household time and money

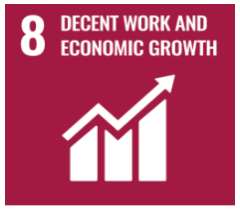
Efficient cooking technologies reduce the amount of fuel needed to cook hence reducing the burden on households that would need to trade to food for energy

Reduced disease burden associated with household air pollution

Children, particularly girls are kept out of school in order to contribute to household chores sich as firewood collection

Unpid work and time lost in fuel wood collection and tending to inefficient cookstoves is a major cause of inequality

Addresses energy poverty and ensures sustainable energy security



Energy access enables enhanced productivity and inclusive economic growth
The clean cooking sector is a source of green jobs

Clean cooking address household and ambient air pollution

Reduced GHG and black carbon emissions.

Reduced harvesttng of non renewable biomass

KEY TRENDS IN CLEAN COOKING

- Global effort towards voluntary International Standards for household and institutional cook stoves;
- Most countries have developed national standards
- A better understanding of the burden of disease attributable to Household Air Pollution and emission reductions are needed
- New partnerships and platforms developed to bolster consumer and enterprise financing
- Improvements in in-country and regionally-based manufacturing capabilities, bringing quality products, at scale, closer to the end user
- The ability of stove projects to receive carbon financing; and
- Increased focus and ability to test stove performance and monitor stove usage, thereby ensuring that products meet user needs and projects attain desired outcomes.

STOVE QUALITY PARAMETERS

- Parameters for standardization of cook stove technologies include:
- Thermal efficiency
- efficiency,
- Total emissions,
- indoor emissions and;
- safety

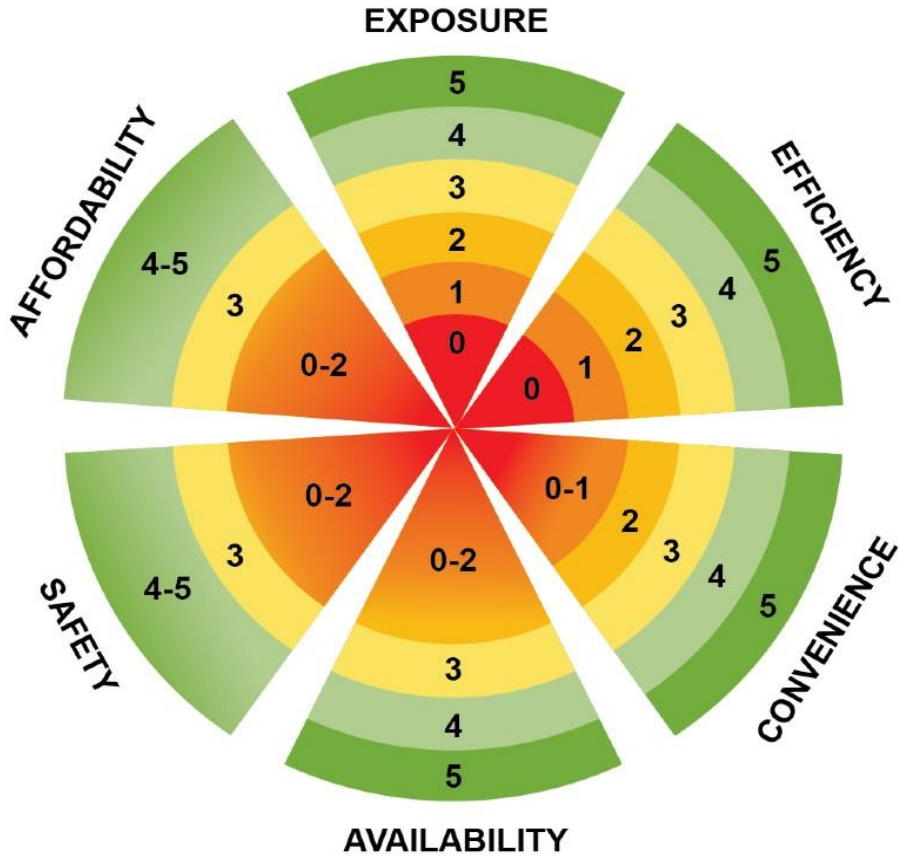
Tier 0	Tier 1	Tier 2	Tier 3	Tier 4	Tier 5
					

ASSESSING COOK STOVE PERFORMANCE

ISO/ IWA tier parameters

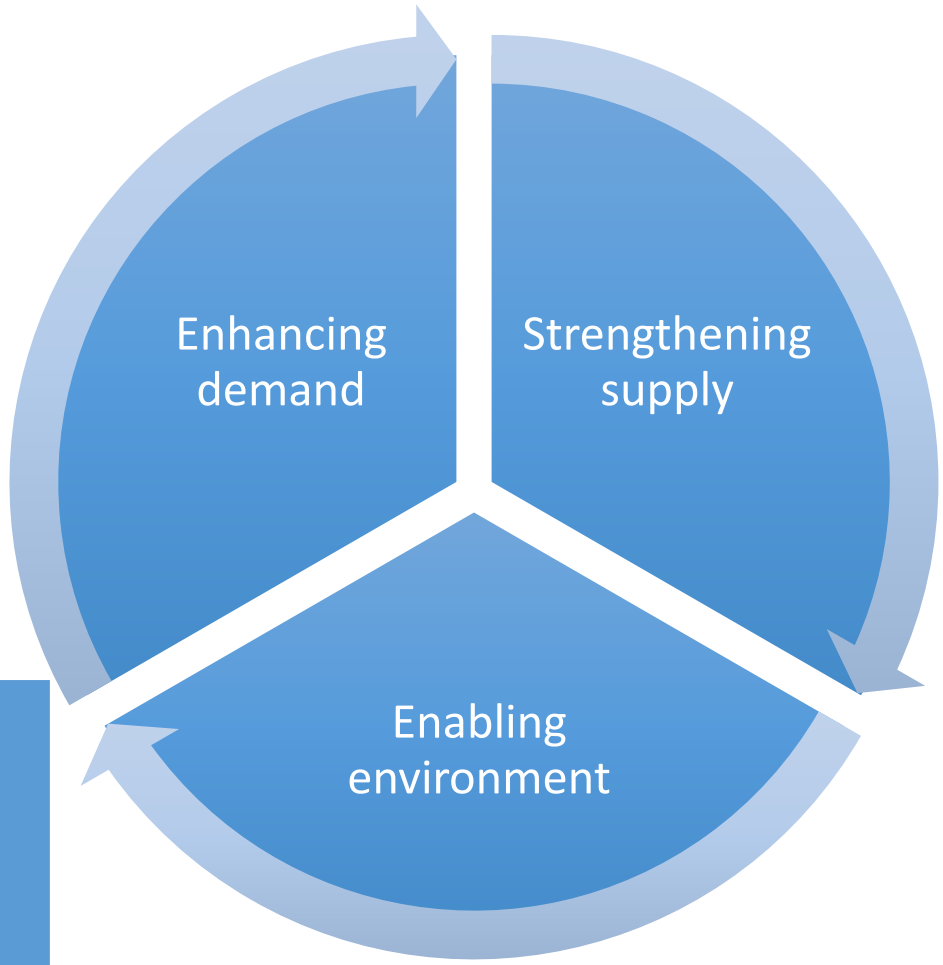
Tier	Thermal efficiency (%)	CO emission factor (g/MJ)	$PM_{2.5}$ emission factor (mg/MJ)	Fire-power (W)
Tier 0	< 15	> 16	> 979	< 500
Tier 1	≥ 15	≤ 16	≤ 979	≥ 500
Tier 2	≥ 25	≤ 11	≤ 386	≥ 750
Tier 3	≥ 35	≤ 9	≤ 168	≥ 1 000
Tier 4	≥ 45	≤ 8	≤ 41	≥ 1 500

World Bank Multi-tier Framework



ACCELERATING CLEAN COOKING ACCESS

Enhancing demand
How well you know the market's primary cooking needs, purchasing power and financing options
- **Consumer preferences**
- **Gender dynamics**



Strengthening supply
- **Are the technologies on the market available to ensure sustainable supply?**
- **Have they been tested by a REPUTABLE lab?**
- **Has the fuel been tested with customers?**
- **Distribution network**
- **Market provision for replacement of parts and O&M**
- **Opportunities to provide income sources for women?**

Enabling environment
- **Regulation on safety, human rights, environmental compliance**
- **Sufficient enforcement capacity**
- **Government market support in physical infrastructure and distribution (e.g LPG and electricity, PPPs in ethanol), testing facilities**
- **Climate and carbon finance, financing mechanisms etc**
- **Incentives such import and VAT tax waivers etc**
- **Labelling and certification of stove appliances**
- **Sector policies and national devt plans**

LABELLING AND CERTIFICATION OF CLEAN COOKSTOVES

- The labelling and certification mechanism is aimed at enabling Ugandan households' transition to cleaner and more efficient stoves and fuels to improve health and reduce environmental impacts.
- promote clean cooking appliances by establishing minimum performance standards based on set criteria.
- Aims to help consumers and project developers identify and choose cook stoves and fuels that minimise the environmental impact, improve indoor air quality, and enhance overall cooking efficiency.

The main principles of the labelling and certification mechanism include:

- Environmental Impact: Reduce carbon emissions, deforestation, and air pollution associated with traditional cooking methods.
- Improving Indoor Air Quality: Ensure that certified cook stoves minimise harmful emissions and particulate matter, improving the health and safety of users.
- Energy Efficiency: Encourage the use of cookstoves that maximise fuel efficiency, reducing the consumption of cooking fuel and saving resources in line with established national standards;
- Safety Standards: Establish safety requirements to mitigate the risk of accidents and promote user safety; and
- Consumer Awareness: Educate consumers about the benefits of certified cookstoves and provide them with easily identifiable labels for informed purchasing decisions.

LABELLING AND CERTIFICATION PROCESS

Standards and Criteria Development:

- Collaborate with industry experts, environmental organizations, and stove manufacturers to establish comprehensive standards and criteria for sustainable cook stoves. This includes emissions reduction, energy efficiency, safety features, and materials used.
- The Ministry, in collaboration with UNBS, has developed national standards for clean cooking appliances and fuels. The standards will be reviewed and updated;

Laboratory Testing:

- Independent testing laboratories certified by UNBS will conduct rigorous performance evaluations of cookstoves against the established standards. This includes measuring carbon emissions, indoor air quality, fuel efficiency, and safety.

Certification Levels:

- Cookstoves meeting the established standards will receive certification based on their performance. Different levels of certification will be established to differentiate between various performance tiers.

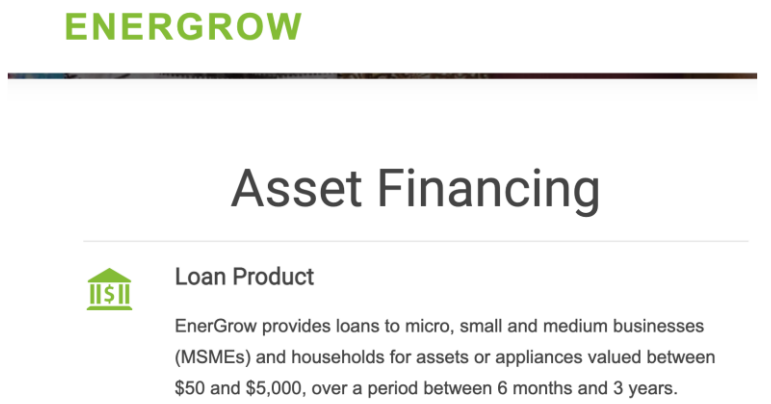
LABELLING AND BRANDING

- The Ministry, through the Interministerial Committee on Clean Cooking (IMCCC), will develop the criteria required for labelling and certification.
- The IMCCC comprises UNBS, Ministries of Environment, Internal Affairs, Trade, Energy and Finance, and NEMA.
- The IMCCC will be responsible for designing and approving a national comparative label for clean cookstoves and fuels.
- Appliances will obtain this label based on certification and display it based on the certification level/ grade or tier, and key performance indicators.
- This labelling will help consumers identify and compare products in the market. The label will have a QR code for ease of authentication
- Development of the label will take on a process similar to the labels developed for other appliances, such as fridges and lighting appliances

CURRENT LABELS USED IN THE COOKSTOVE INDUSTRY

Incentives to drive clean cooking in Uganda

- Zero tax on solar panels to support solar cooking and biogas tubular digesters
- VAT waiver on LPG and denatured ethanol for cooking (produced from cassava)
- Excise duty and VAT waiver on denatured ethanol
- Zero tax on imports on stove parts for local assembly
- Access to affordable capital for the private sector
- Asset financing
- 10% import tax on stoves for EAC region



Gaps and opportunities for support

- Capacity to package clean cooking programs for climate and carbon financing (understanding and regulating Article 6.2 to scale
- Integrated resource planning for clean cooking
- Support the development of measuring, reporting and verification systems for clean-cooking climate projects
- Support the development of a National Clean Cooking Strategy for Uganda that also speaks to the rural community collecting firewood for free
- Packaging of an ambitious clean cooking program (electricity, biogas and ethanol)
- The need for minimum energy performance standards for clean cooking

THANK YOU FOR LISTENING