Africa Energy Efficiency Policy in Emerging Economies Training Week

Appliances and equipment

Nairobi
18-21 March 2024

International Energy Agency

Appliances & Equipment Stream: Tuesday 19 March 2024 (Day 2)

Energy Efficiency of Appliances & Equipment Overview of Day 2

Day 2: Tuesday, 19th March	
9:00 – 9:30	Review Learnings from Day 1 & Data Request Clara Camarasa, International Energy Agency and Emily McQualter, International Copper Association
9:30 - 10:30	4. Making it Happen: insights into energy labels Emily McQualter, International Copper Association Guest Speaker: Ashanti Mbanga, SANEDI Programme
10:30 – 11:00	Coffee and Tea Break
11:00 – 12:00	5. Making it Happen: understanding the market Clara Camarasa, International Energy Agency Guest Speaker: Asteria Markus, Energy Efficient Lighting and Appliances (EELA) and Southern African Development Community (SADC) Centre for Renewable Energy and Energy Efficiency (SACREEE)
12:00 – 12:30	Group Activity
12:30 – 13:30	Lunch
13:30 – 15:00	6. Making it Happen: industry transformation and incentives Melanie Slade, International Energy Agency Guest Speaker: Luc Tossou, African Development Bank (AfDB)
15:00 - 15:30	Coffee and Tea Break
15:30 – 16:30	8. Making it Happen: stakeholder involvement and communication Moderator: Emily McQualter, International Copper Association
16:30 – 17:30	Group Exercise
17:30 – 18:30	Integration Activities

Reflections and learnings from the first day

- 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: Insights into Energy Labels

Emily McQualter, International Energy Agency

Nairobi, 19 March 2024

Key learning outcomes

- Why energy labels are important
- What types of energy labels exist
- What to consider when designing and placing energy labels on products
- The role of awareness raising campaigns for product energy labels

What are energy labels?

- Energy labels **provide a clear and simple indication of the energy efficiency and other key features of products at the point of purchase**. This makes it easier for consumers to save money on their household energy bills and contribute to reducing greenhouse gas emission.

- Appliance labelling works best as a complement to appliance standards such as MEPS.

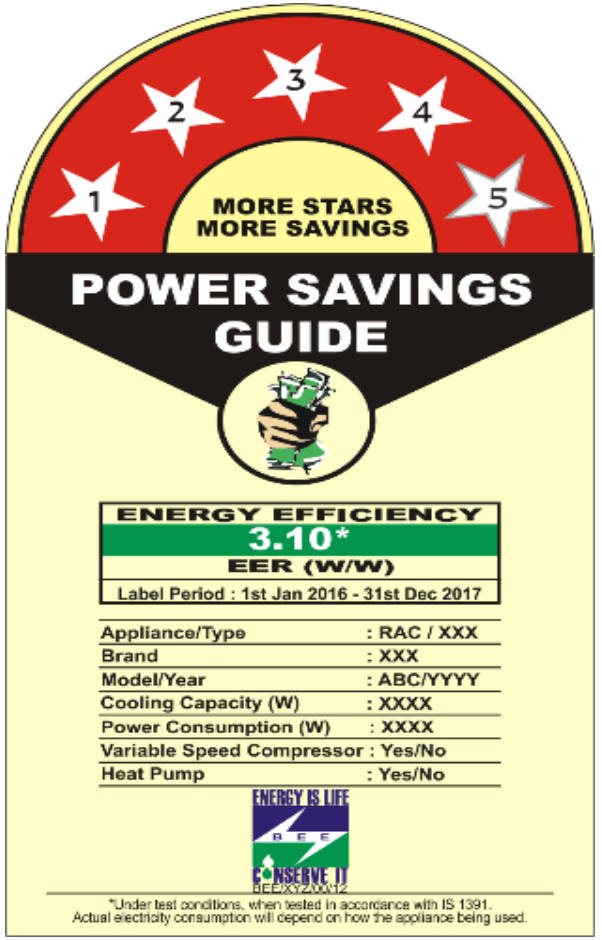
- Energy labels are mostly found as stickers on the appliance, and are also increasingly used on online stores.

What are energy labels?

- When people buy an appliance, they pay for an energy service in two parts:
    1. They can see the appliance, and its cost
    2. They cannot see the energy consumed, or its running costs
- Energy labels provide consumers with information on the energy efficiency and energy consumption of a product
- There are two main types of labels:
    1. Comparative
    2. Endorsement

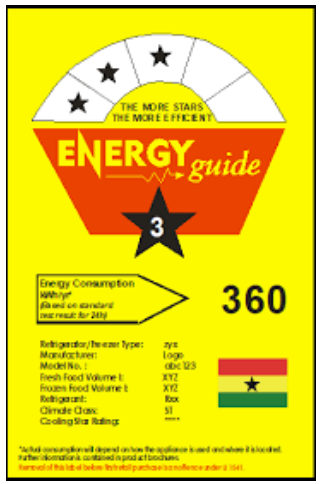
Comparative labels

- The labels help consumers to understand which products have the lowest total cost
- Energy label is attached to an appliance when it is displayed for sale: it tells people about the energy use before they buy
- Comparative labels may be voluntary, but mandatory labels are more common.
- Comparative labels usually communicate in two ways:
  - A quick visual rating
  - Detailed data e.g. actual kilowatt-hours (kWh), running costs, capacity/size



Dial

Ghana

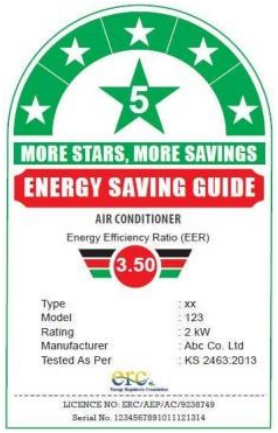


Thailand

South Korea

Indonesia

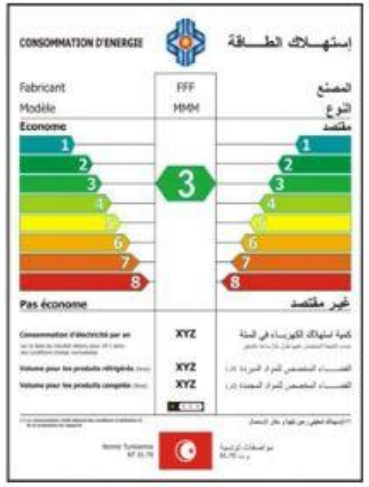
Kenya



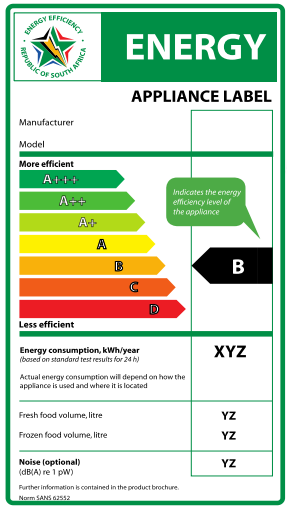
Singapore

Bar

Tunisia



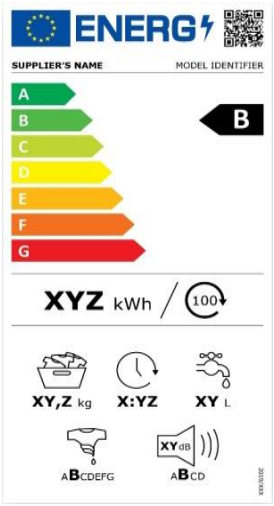
South Africa



Brazil

China

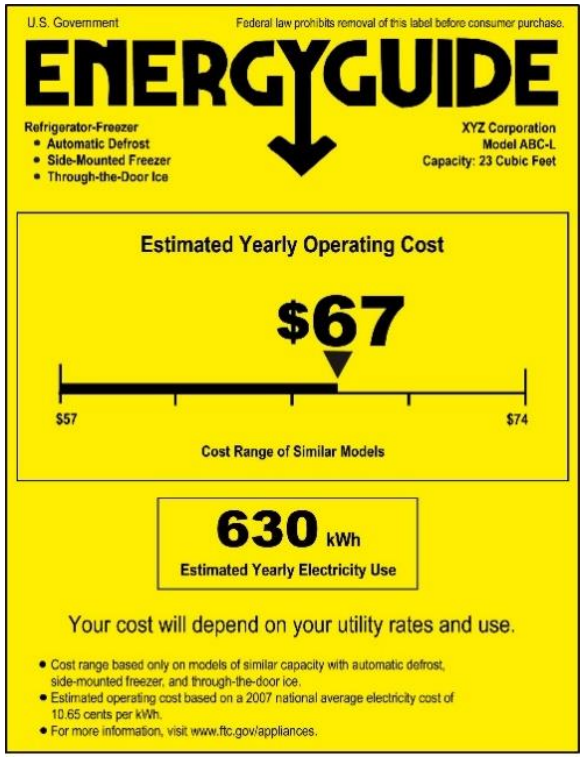
EU



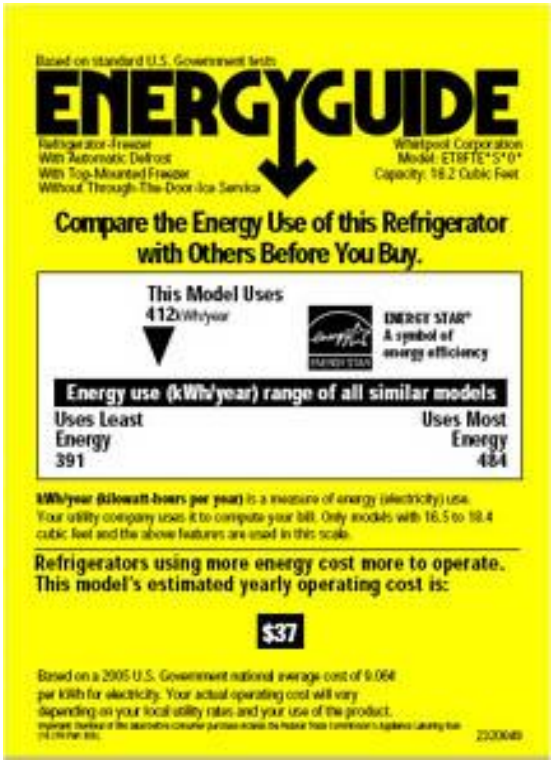
Continuous Comparative Labels

Continuous

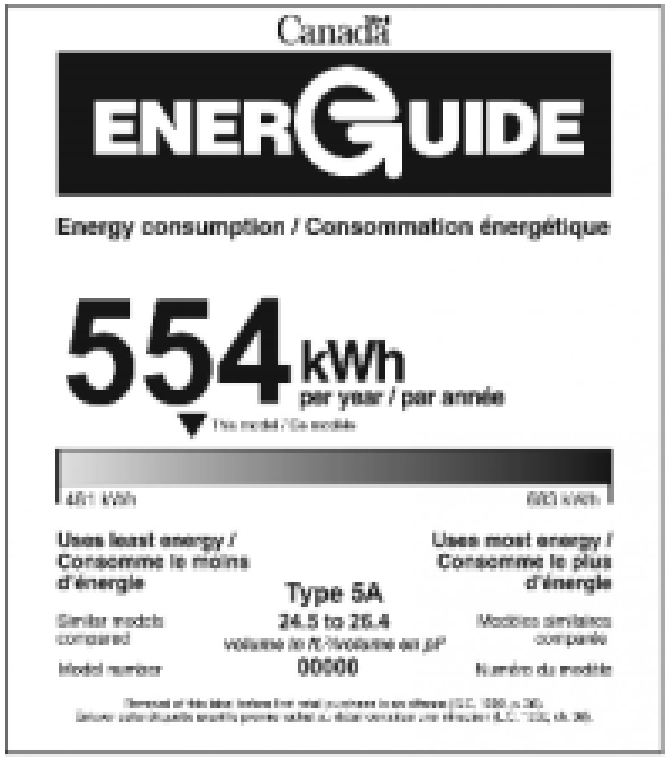
United States



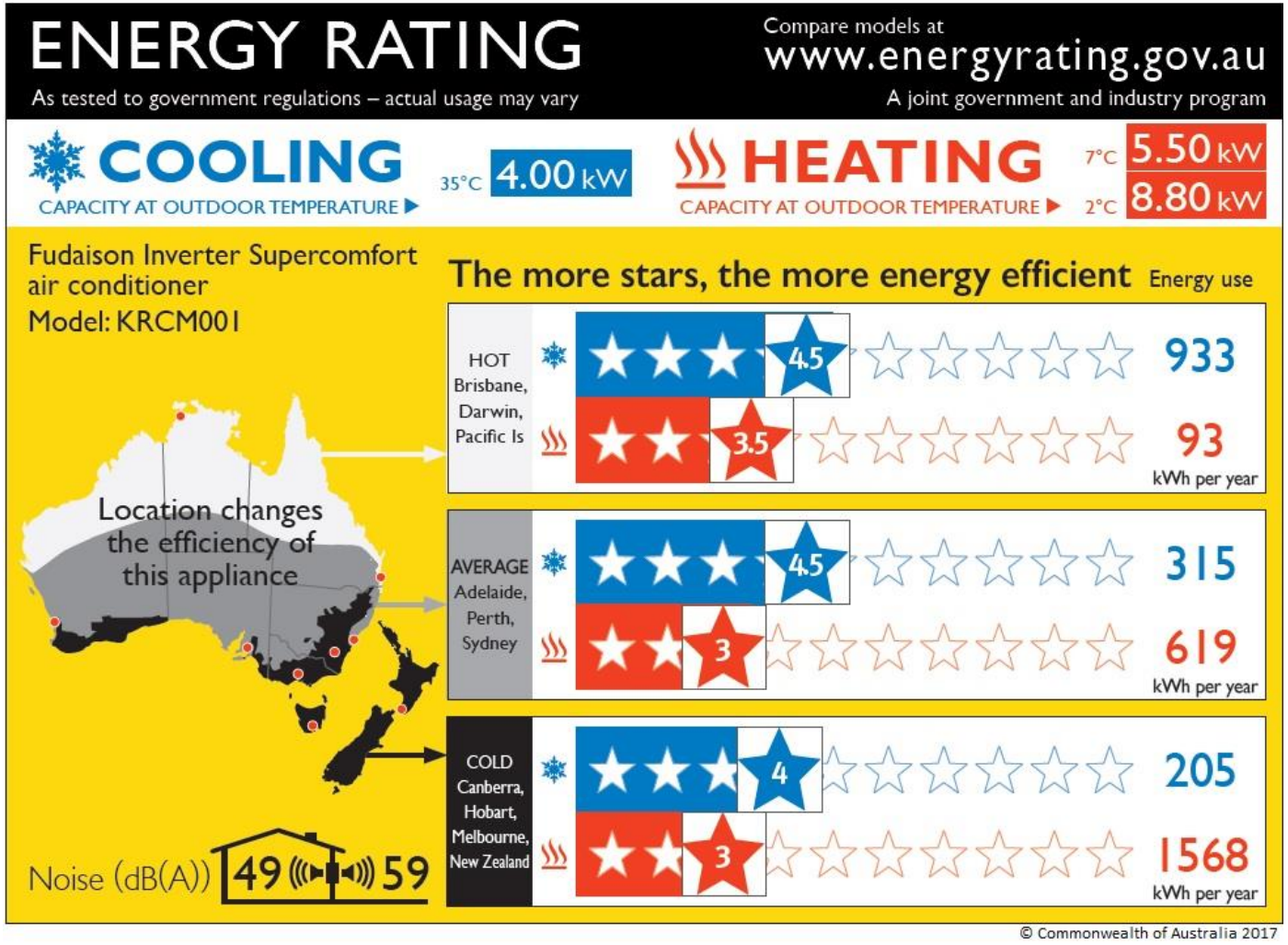
Philippines



Canada

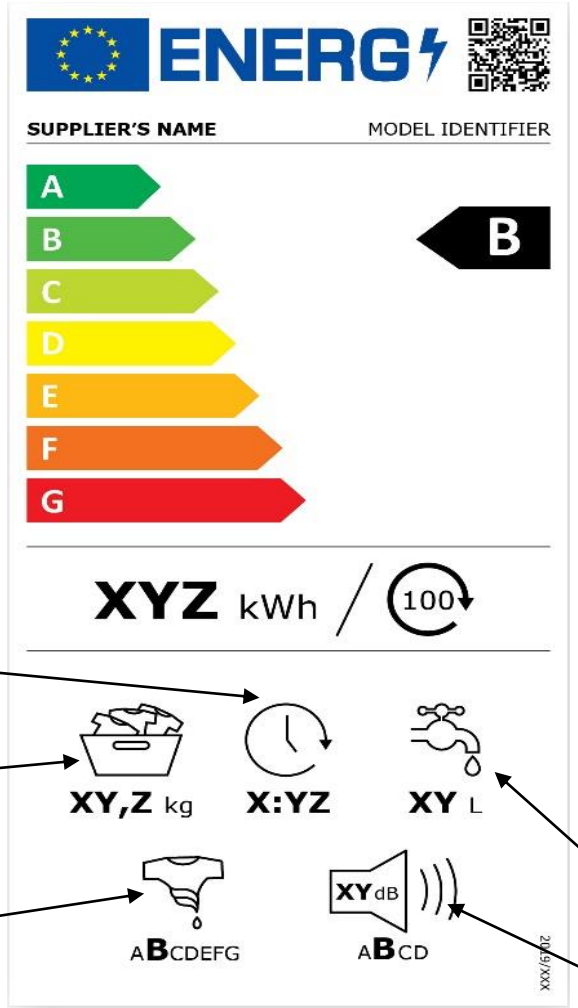


Zoned Comparative Energy Label



What information can be included? EU example

QR Codes



Programme time

Kg laundry per wash

Remaining water content

Water consumption

Noise levels

- Energy consumption
- Programme time
- Water consumption
- Power consumption in 'off-mode'
- Power consumption in 'left-on mode'
- 'left-on mode' duration
- Remaining moisture content
- Airborne acoustic noise emissions
- Maximum spin speeds.

Endorsement labels

- Identify the most energy efficient models
- Generally, endorsement labels show no product specific information
- Endorsement labels are voluntary but have rules around their use which must be complied with
- Can be updated more rapidly than a comparative energy label
- Usually paid for by manufacturers and are third party tested
- Often linked to High Efficiency Performance Standards or HEPS which are in turn used for incentives

Label placement

Label placement is important

Label placement

Label Design

The most effective labels are visually intuitive

Clear and easy to understand
Less information in better

Labels work in different ways to reflect cultures & different perceptions

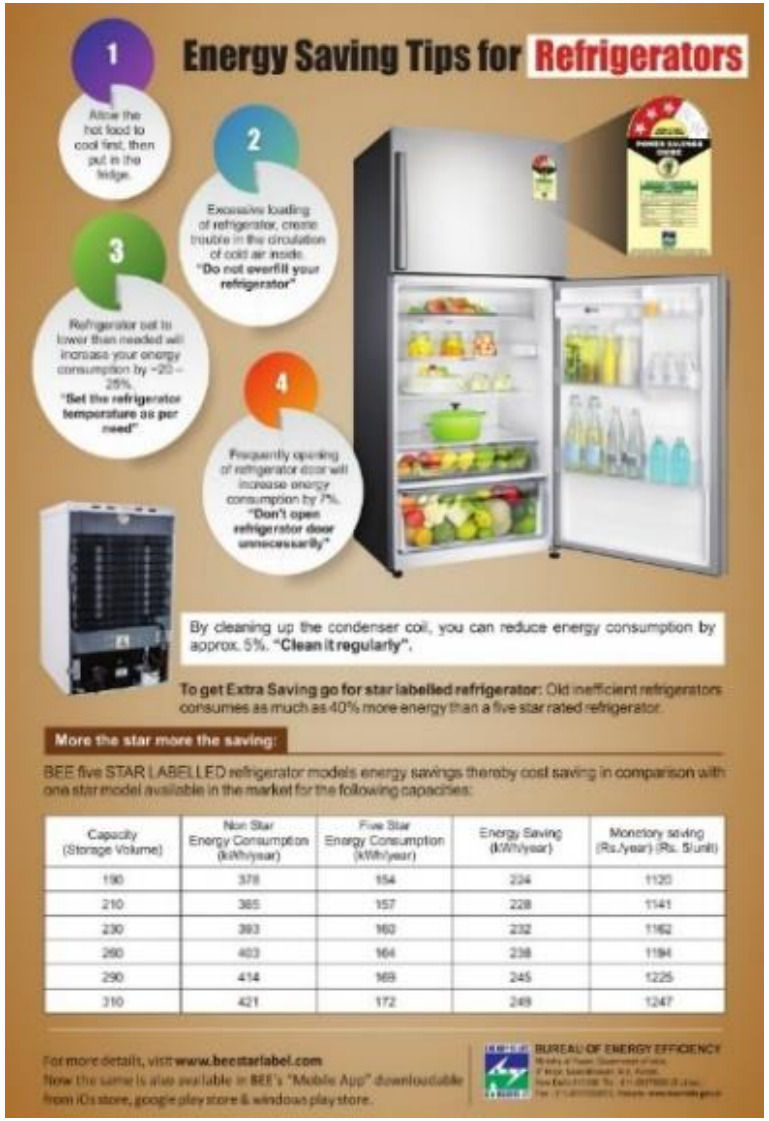
Letters vs numbers, language, left to right ranking

Pick one label design and stick to it

It takes years for buyers to become familiar with labels

Awareness Raising

- Effective labels require buyer awareness-raising campaigns
- Buyer purchasing decisions that favour energy-efficient and high-quality products ultimately provide a “pulling” force in the market
- Encouraging consumers and others to buy products at the high end of efficiency and quality creates market demand (and drives down prices)
- Retailer training programmes have been successful in many countries



Awareness raising in India

Organised by:
- Bureau of Energy Efficiency
- National Power Training Institute

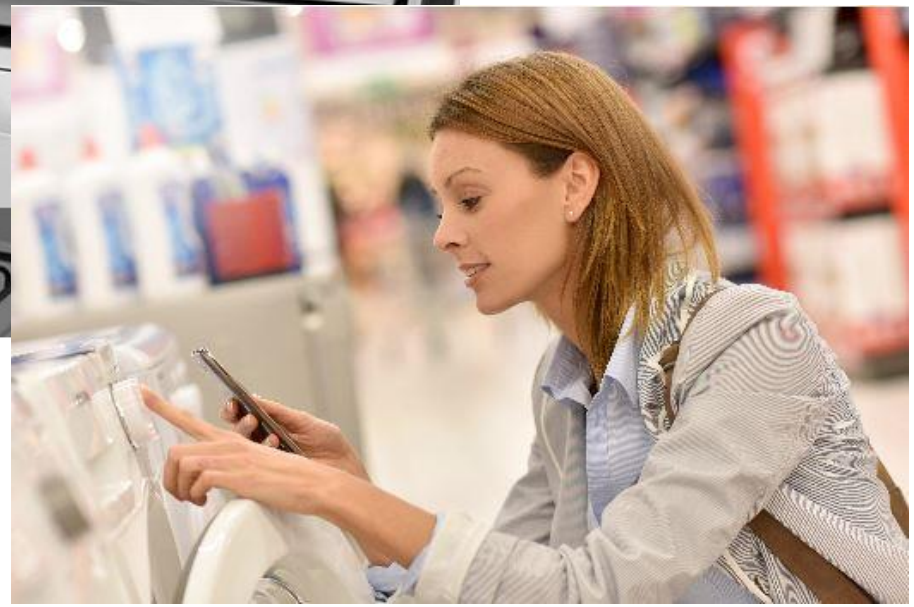
Stakeholders from:
- Retail companies (2000 retail shop staff in
- 18 training sessions in 6 cities)

Purpose:
Enable retailers to support customers in making energy efficient decisions when purchasing appliances and equipment

Comparison Tools

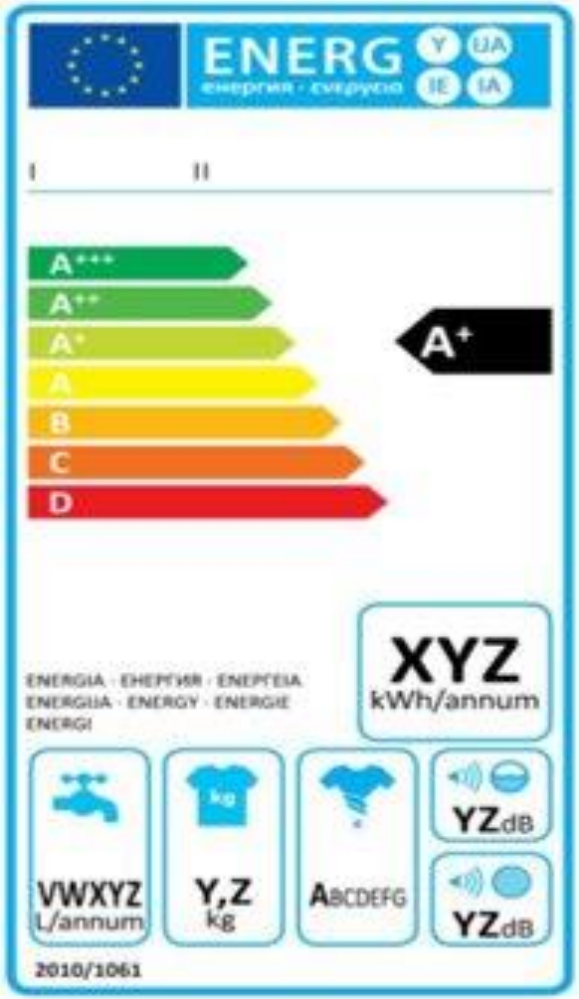
PocketWatt
YOUR ENERGY EFFICIENCY GUIDE

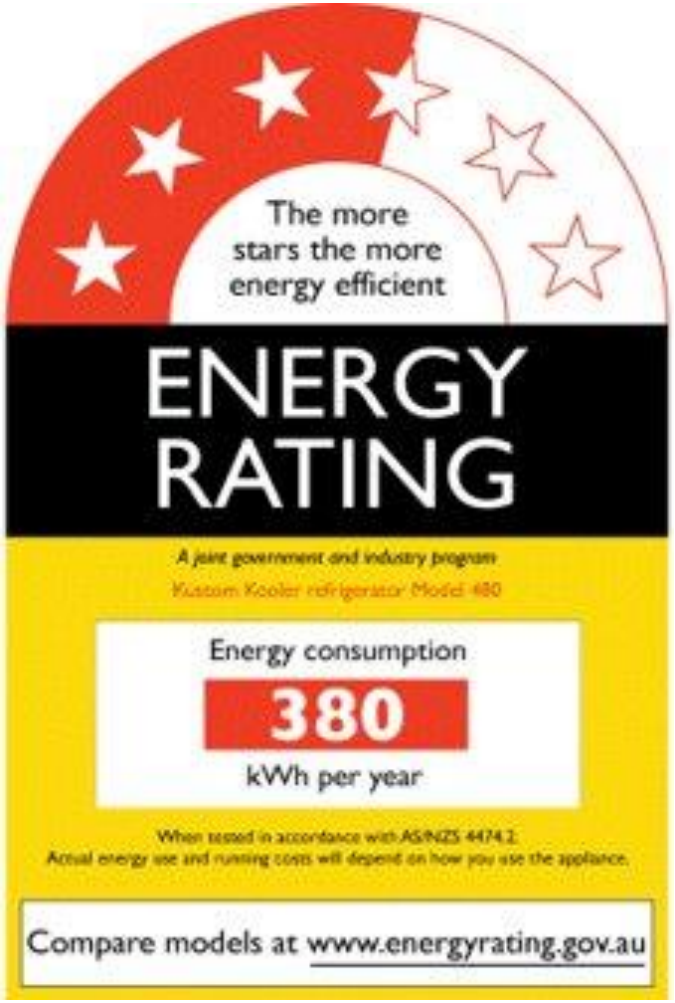
Home PocketWatt Retailers Partners Roundtable News Publications Contact About PocketWatt Web English



Label Awareness Raising

Exercise: In Groups discuss which label you prefer and why





Resources

- https://www.iea.org/reports/achievements-of-energy-efficiency-appliance-and-equipment-standards-and-labelling-programmes
- https://united4efficiency.org/wp-content/uploads/2021/01/U4E-Labelling-Guidance_20210125.pdf
- https://www.clasp.ngo/research/all/study-to-evaluate-online-energy-labelling-compliance-in-the-eu/
- IIEA/4E TCP, “Achievements of Energy Efficiency Appliance and Equipment Standards and Labelling Programmes,” Paris, 2021.
- IEA, “Energy Efficiency 2022,” Paris, 2022.
- https://commission.europa.eu/energy-climate-change-environment/standards-tools-and-labels/products-labelling-rules-and-requirements/energy-label-and-ecodesign/about_en
- https://www.sustainability.vic.gov.au/energy-efficiency-and-reducing-emissions/save-energy-in-the-home/energy-rating-labels#:~:text=The%20Energy%20Rating%20Label%20is,models%20of%20the%20same%20capacity.
- https://www.energyrating.gov.au/
- https://genless.govt.nz/

sonedi
South African National Energy Development Institute.

mineral resources
Department:
Mineral Resources
REPUBLIC OF SOUTH AFRICA

THE SOUTH AFRICAN ENERGY EFFICIENCY LABEL

Ashanti Mbanga

the dtic
Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA

SABS

NRCS
national regulator for compulsory specifications

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South African Energy Efficiency Label

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WHO WE ARE

Government Gazette

REPUBLIC OF SOUTH AFRICA

Vol. 521 Cape Town 24 November 2008 No. 31638

THE PRESIDENCY 24 November 2008

No. 1263

It is hereby notified that the President has assented to the following Act, which is hereby published for general information:–

No. 34 of 2008: National Energy Act, 2008.

AIDS HELPLINE: 0800-123-22 Prevention is the cure

The National Energy Act, No. 34 of 2008 established the South African National Energy Development Institute (SANEDI) by transferring all the personnel, assets and liabilities of the South African National Energy Research Institute (SANERI), also a wholly owned subsidiary of CEF, and the National Energy Efficiency Agency (NEEA), to SANEDI.

The National Energy Act, 2008 (Act No. 34 of 2008), Section 7 (2) provides for SANEDI to direct, monitor and conduct energy research and development as well as undertake measures to promote energy efficiency throughout the economy.

The overarching purpose of SANEDI is to assist the Department of Energy in fulfilling its energy mandate and transition towards a sustainable, low carbon energy future.

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WHAT WE DO- S&L PROGRAMME

Mineral Resources & Energy
Department:
Mineral Resources and Energy
REPUBLIC OF SOUTH AFRICA

sanedi
South African National Energy Development Institute

- Impact reporting against national EE targets
- Strategic and effective awareness creation.
- Market and Impact Assessments to inform policy developments.

the dtic
Department:
Trade, Industry and Competition
REPUBLIC OF SOUTH AFRICA

NRCS

- Impact reporting against national EE targets.
- MEPS strengthening & enforcement.
- VC specifications

SABS

- Impact reporting against national EE .
- SABS standards development.
- Testing capacity strengthening

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WHY WE DO WHAT WE DO

- Contribute to the achievement of international commitments
- Contribute to the achievement of national energy savings targets
- Green House Gas Emissions avoidance
- Consumer protection
- Transformation of markets

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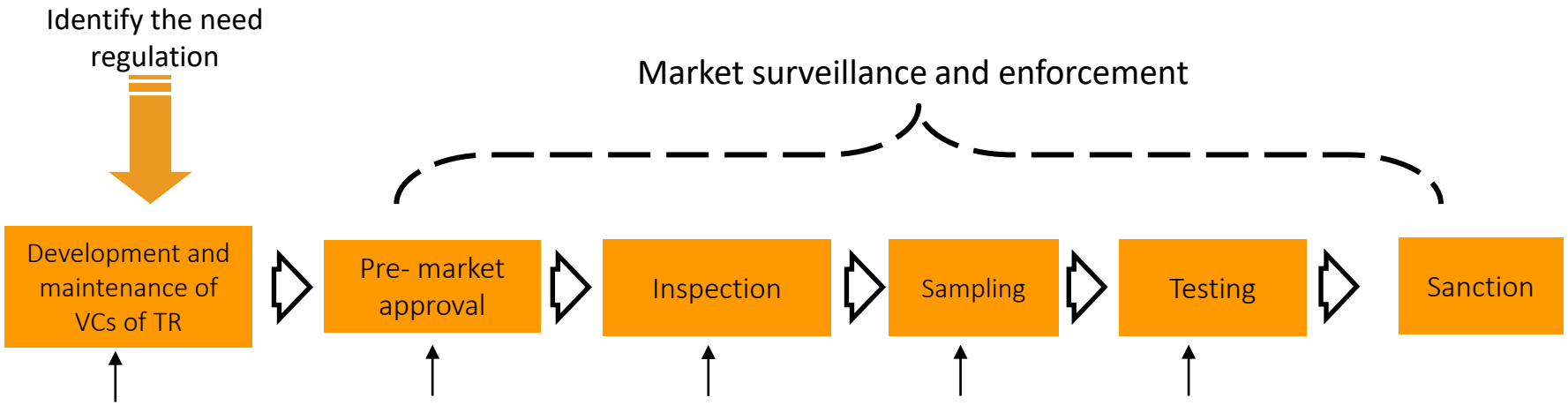
HOW WE DO IT

Regulatory process



NRCS national regulator for compulsory specifications

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REGULATED BASKET

Dishwashers

Washer Dryer

Washing machines

Tumble Dryers

Electric Ovens

Fridges

Water heater

Air conditioners

Audio – Visual Equipment

Freezers

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LIGHTING THE WAY OUT

Electric Lamps:

- New VC 9109 (Performance) & VC 9110 (Safety)
- Replaces VC 8043 & VC 9091
- Promote the use of LED, Zero Mercury
- MEPS 90 Lm/W (Class F):2024
- MEPS 105 Lm/W (Class F): 2026
- Phase Out Incandescent & Compact Fluorescent Lamps

Electric Streetlighting Luminaires:

- To cover the complete efficiency of street lighting, complete luminaires & the tubes
- This will a significant impact on phasing out Mercury
- VC Development :2024/25 financial year
- Envisage to implementation date:2026
- To phase out all luminaires with mercury

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ELECTRIC MOTORS

- VC 9113- efficiency of Electric Motors
- Industrial application (3phase)
- MEPS: IE3
- IE1&IE2 will not be allowed
- Published October 2023 for public comment
- Process of Submitting to the Minister of the dtic for final gazetting
- Implementation would be 12 month after publication (April/May 2025)

LITHIUM-ION BATTERIES

- To cover Lithium batteries use in with Solar Panels for electricity storage & backup, Portable electronics\Electrical products (Power Tools and ICT equipment)
- NRCS conducting an Impact Assessment
- The project will be finalized before the end of 2024
- Envisage implementation is in 2025

WIN-WIN- THE STATE

- The country currently experience energy crisis, so reduced electricity use will help reduce loadshedding stages.
- Increase access to electricity, moving closer to achieving universal access.
- Reduced electricity use result in less air pollution, lower Greenhouse gases emissions.

WIN-WIN- INDUSTRY

- To ensure competitors with Appliances that do not meet Minimum Energy Performance Standards are unable to access the South African market.

- To ensure that consumers know which appliances have high energy efficiency and their manufacturer.

- To help manufacturers and importers to play a role in protecting the planet.

WIN-WIN RETAILERS

- To help retailers to provide a better service to customers.
  - Go through the Energy Efficiency Label with the customer before making a sale.
  - Helping customers to choose appliances with high energy efficiency grading.
- Protection from selling inefficient appliances.
- Upsell using EE Label for improved sales.
- To Help Retailers play a role in protecting the planet.

WIN-WIN- CONSUMER

- Access to accurate information regarding the product.
- Confidence in accuracy of product energy performance.
- Reduced electricity bill.
- Premium technology products

SOUTH AFRICAN ENERGY EFFICIENCY LABEL

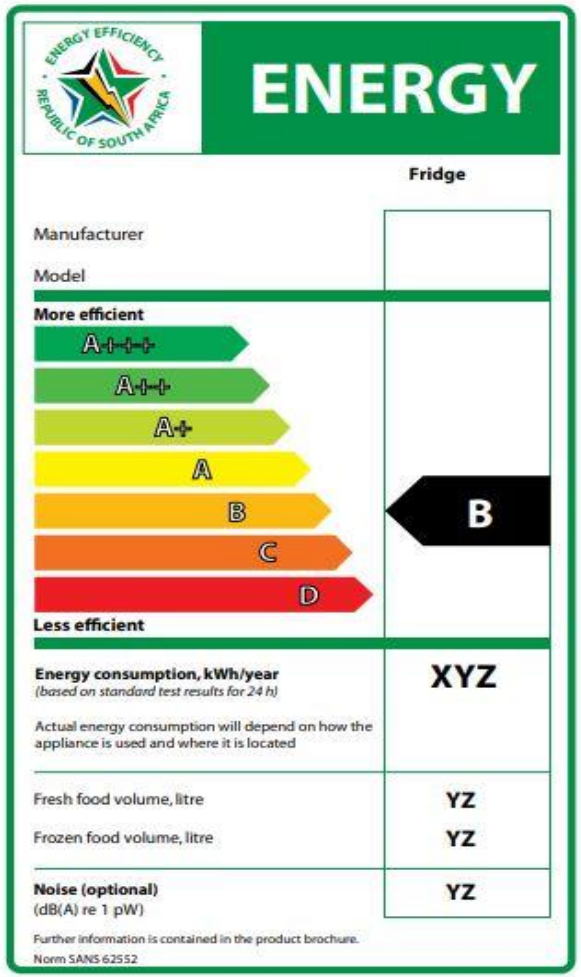
SA Energy Efficiency logo

Energy grading scale:

Colour-coded grading scale showing the top (in this case an A+++) and bottom (in this case a D) grading for this appliance type.

Additional information:

Additional information for this appliance.



Product identification:

- Type of appliance
- Manufacturer
- Model

Appliance rating:

The black arrow indicates the rating achieved by the specific appliance.

Indicative energy use:

Energy consumption by this appliance under standard operating conditions.

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THE EE LABEL EXPLAINED

The Energy Efficiency Label **must** always have South African Energy Efficiency Logo

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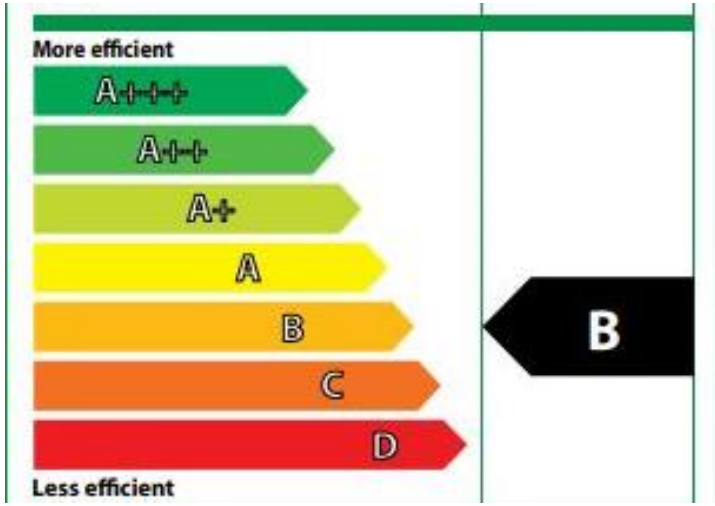
THE EE LABEL EXPLAINED

- The colour-coded grading scale offer a graphic indication of the different levels of efficiency.
- A+++ is the most efficient with D being the least efficient.
- Consumers must be informed that the higher the efficiency level the less it will cost to run the appliances.



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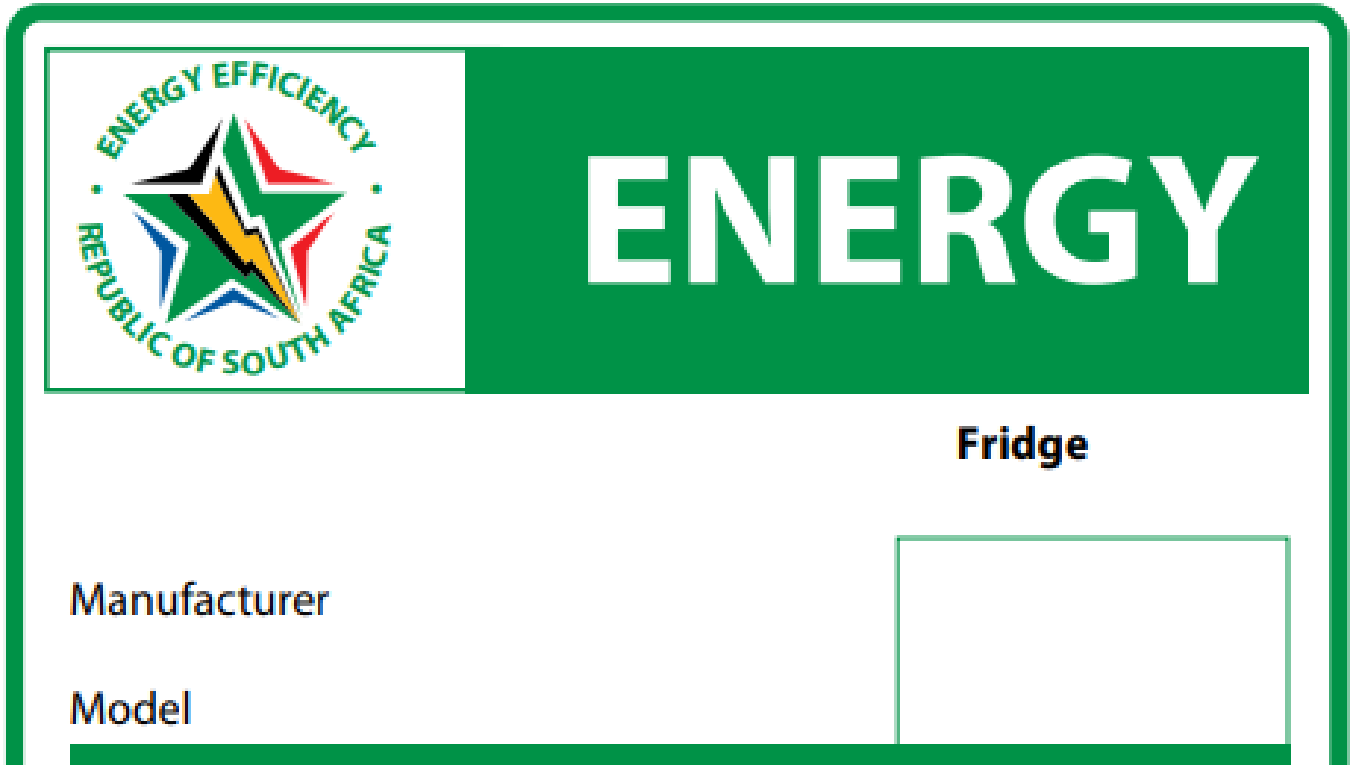
THE EE LABEL EXPLAINED



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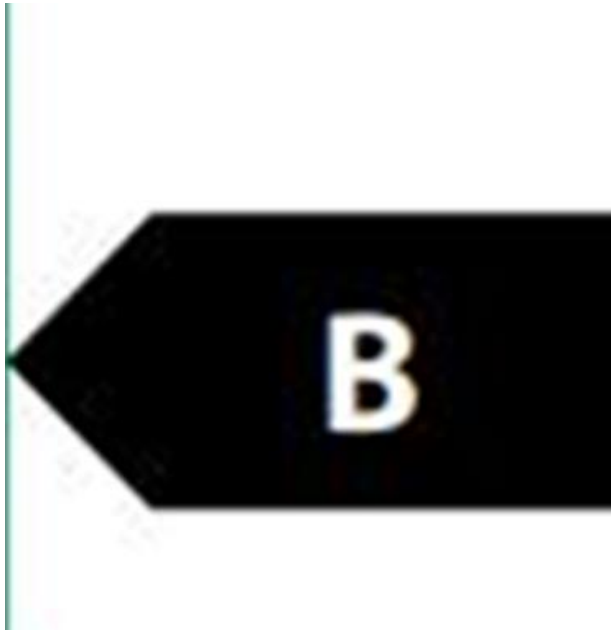
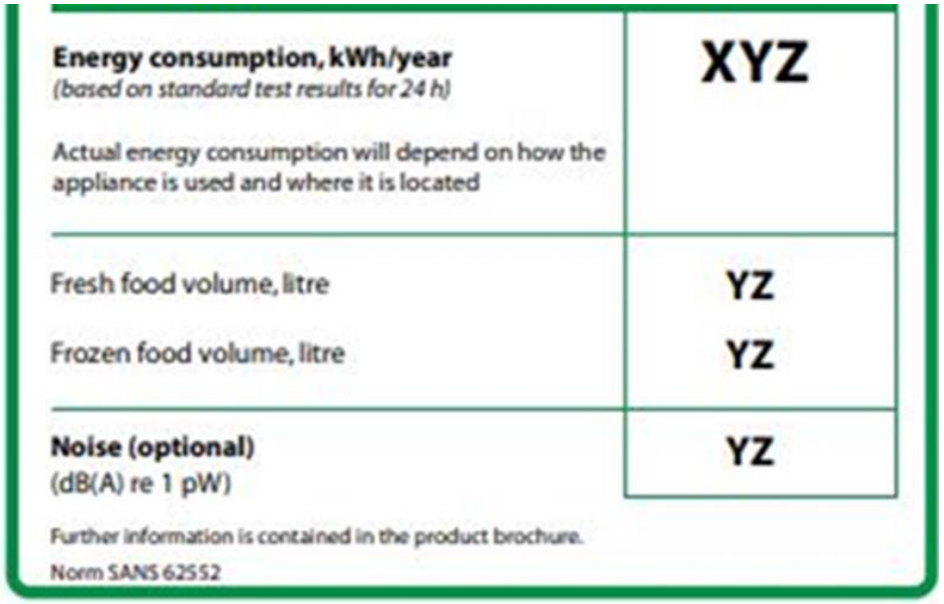
Information found on the Energy Efficiency Label – Appliance Rating

- The black Arrow indicates the rating achieved by the appliance of interest.



THE EE LABEL EXPLAINED

Additional information is provided regarding a particular appliance.



Energy consumption, kWh/year *(based on standard test results for 24 h)* Actual energy consumption will depend on how the appliance is used and where it is located	**XYZ**
Fresh food volume, litre	**YZ**
Frozen food volume, litre	**YZ**
Noise (optional) (dB(A) re 1 pW)	**YZ**

Further information is contained in the product brochure.

Norm SANS 62552

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THE ENERGY EFFICIENCY LABEL

- South Africa is currently using the Energy Efficiency Grading A+++ to D.
- Based on the research findings the presence of grading above A create confusion. An “A” is typically understood to be the highest level and between 80 – 100%. For many, their frame of reference is the school grading system.
- The following statements were asked by consumers when the research was conducted:

> *“A is 100%, so how much is A++++? 150%?” (LSM 9-10+, Johannesburg)”*
>
> *“What does A++ mean? Sounds like a battery” (LSM 4-5, Tongaat)*
>
> *“The higher up you go the more work goes into making it more energy efficient that’s why it will cost more … if you start going A +++ you are going to pay” (LSM 8-9, Tongaat)*

THE ENERGY EFFICIENCY LABEL

- On A+, A++ and A+++ each + represents an energy efficiency of 10% greater than the A rating.

  A = x

  A+ = x + 10%

  A ++= x + 20%

  A+++ = x + 30%

- An A+++ rating means that an appliance is at least 30% more efficient than a standard A rated appliance.

- Even though A+++ is 30% more efficient that A rated appliances, consumers who don't understand the Energy Efficiency Label they still choose Energy Efficiency grading.

The need to redesign the Energy Efficiency Label

- The Energy Efficiency Label must be redesigned to A-G Energy Efficiency grading because it is more straightforward, and the grading is easier to understand.

- The difference between A, B,C,D,E,F and G is more straightforward.

- Even Primary School learners aim to get simple A on their tasks.

- It is important for consumers to understand the Energy Efficiency Label so that they can make an informed decision before making a purchase.

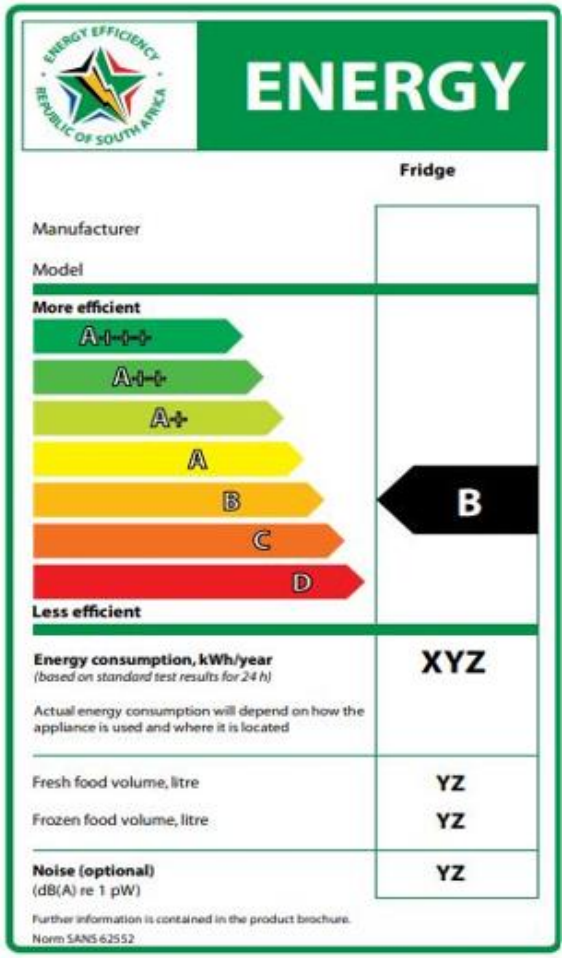
Factors to consider before Redesigning

- Innovation and Development of new technologies.
  - Promote
  - Capability
- Replacing the word efficient
  - Relatable word

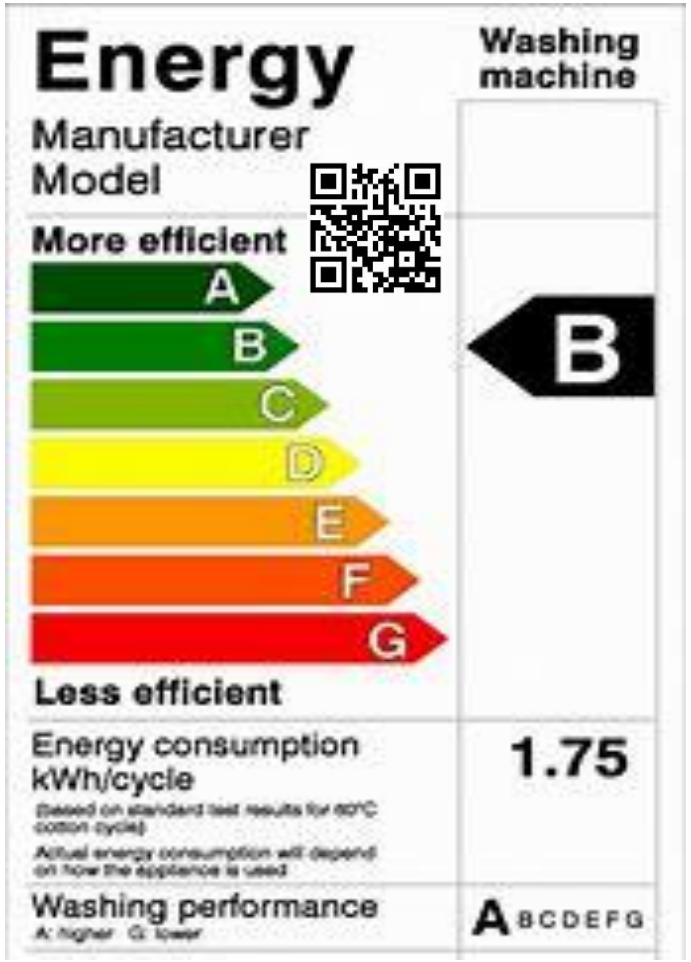
- Input of manufacturers
  - Views
  - Training
- The cost of the appliances

PROPOSED REDESIGN

Current:



Proposed example:



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GUIDANCE ON S&L IMPLEMENTATION

OBJECTIVE:

A manual for government officials and industry members implementing and complying to product standards, respectively. The guide aims to provide an overview of energy efficiency standards and labelling compliance in South Africa across various product categories. Aspects of standards and labelling development, enforcement, monitoring and maintenance will all be included

RETAILER EMPOWERMENT

CONSUMER EMPOWERMENT

"Overall, customers were very engaging and interested educated as they were not aware or didn't understand the Label. This shows there is a massive need for this education drive instore to continue.
Overall sales staff and mangers at the stores were very willing to be educated and supported this project. There is defiantly a need for regular sales staff education instore. Sales staff feel this might help improve their sales.

There is clearly a massive need and want for this education."

NATIONWIDE ACTIVATIONS

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SOUTH AFRICA ENERGY EFFICIENCY LABEL

energy
Department:
Energy
REPUBLIC OF SOUTH AFRICA

REPUBLIC OF SOUTH AFRICA
ENERGY EFFICIENCY INITIATIVE

DATA COLLECTION

Event Date	Venue Name	Region	SECTION A: What percentage of customers did you approach	SECTION A: What percentage of customers that approached are UNEMPLOYED	SECTION A: What percentage of customers that you approached have a PRE-PAID METER at home	SECTION A: What was the majority LSM group you engaged with	SECTION A: What the majority AGE GROUP you engaged with	SECTION A: What percentage of FEMALES did you engage with	SECTION A: What was the majority RACE you engaged with	SECTION A: Disability - Did you engage with any person with a DISABILITY? If so list them OR write 'NO'	SECTION A: What percentage of people you enagaged with LIVE in the area
11-Mar-23	Hirsch's Fourways	GP	70	30	30	LSM 7 to 10	36 to 45 years	40	Black African	No	60
11-Mar-23	Hirschs Hyde Park	GP	100	0	60	LSM 7 to 10	46 to 55 years	20	White	No	50
11-Mar-23	Hirschs Waterfall	GP	70	0	100	LSM 7 to 10	36 to 45 years	60	White	No	100
11-Mar-23	Hirchs Silverlake	GP	80	0	100	LSM 7 to 10	46 to 55 years	50	White	No	70
11-Mar-23	Hi-fi Menlyn	GP	80	30	60	LSM 7 to 10	36 to 45 years	70	Black African	No	100
11-Mar-23	Hi-Fi Southgate	GP	80	10	70	LSM 7 to 10	36 to 45 years	60	White	No	70
11-Mar-23	Hi-Fi corp Eastgate	GP	90	0	70	LSM 4 to 6	36 to 45 years	40	Black African	No	80
11-Mar-23	Hi-Fi Mams mall	GP	80	30	90	LSM 7 to 10	26 to 35 years	60	Black African	Yes	90
11-Mar-23	Hi Fi corp, centurion	GP	50	0	10	LSM 4 to 6	26 to 35 years	70	Black African	No	100
11-Mar-23	Hi-Fi Corp Rosebank	GP	95	10	25	LSM 4 to 6	36 to 45 years	70	Black African	No	85

The data collected at the campaign shows that different consumers were educated about the Energy Efficiency Label. Many of these consumers use prepaid meters so they were more interested in knowing that if they purchase an appliance that is the most energy efficient they are going to use less money to buy electricity.

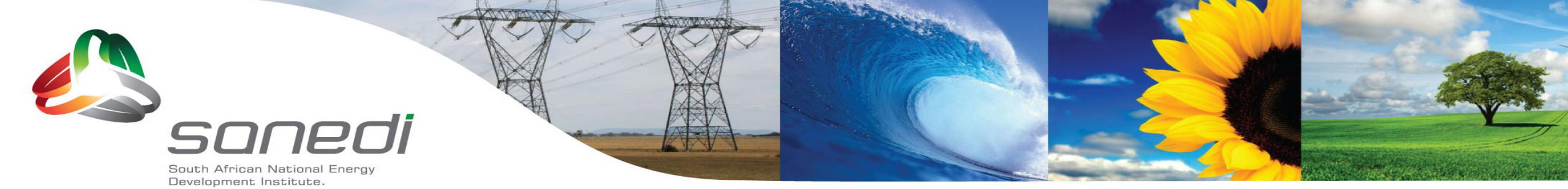
@SA_Energy_Label

South African Energy Efficiency Label

SA Energy Label www.savingenergy.org.za

KEY TAKEAWAYS

- Tailor messaging for invoiced customers. Prepaid and roof top solar are electricity conscious.
- Awareness impact assessment to determine the cost benefit of such initiatives and to motivate for more funding due to positive impact.
- Produce updated virtual training content that can be shared with store Managers to train staff due to high staff turnover, leverage on the availability of brand ambassadors
- Manufacturer and retailer awards
- Incentive pilot projects
- Social behaviour studies
- Quick implementation of consumer feedback



sanedi
South African National Energy Development Institute.

THANK YOU

Project Manager: Ashanti Mbanga- AshantiM@sanedi.org.za

@SA_Energy_Label

South African Energy Efficiency Label

SA Energy Label www.savingenergy.org.za

Coffee and Tea Break

See you in 30 min!

International Energy Agency

Making it Happen: Understanding the Market

Clara Camarasa, International Energy Agency

Nairobi, 19 March 2024

Key learning outcomes

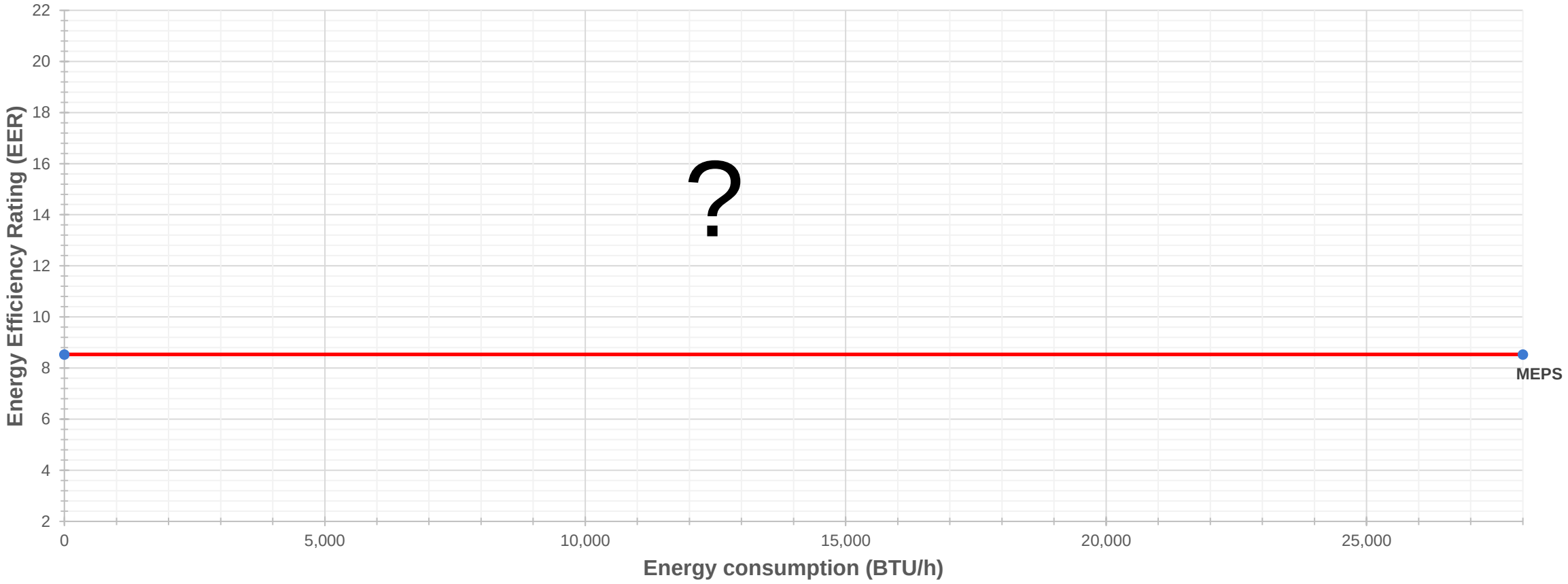
- Why data is needed in appliance energy efficiency policy
- What data is needed in appliance energy efficiency policy
- Overview of information sources
- Market data: sources, data collection and analysis
- Other types of data: ownership and usage

You are asked to revise and increase the levels of existing MEPS for all appliances.

Discussion question: What market data would you need to ensure an effective revision?

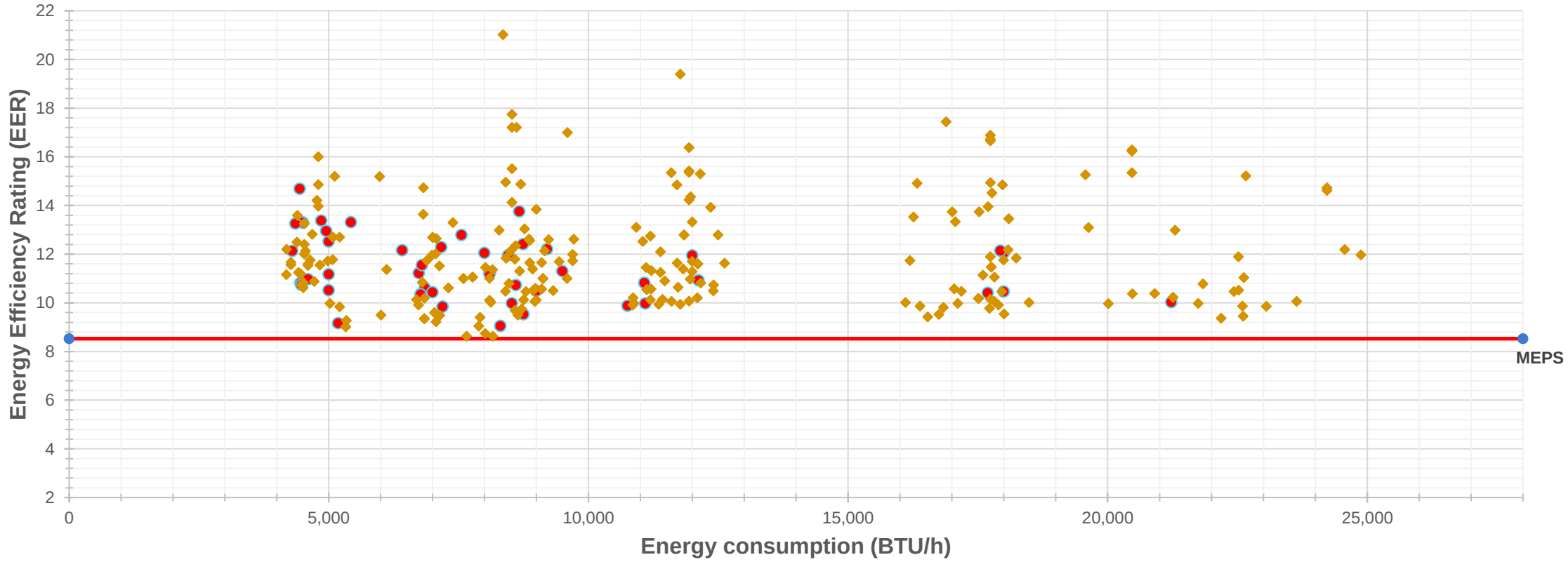
Why does effective policy design require appropriate data?

Case study: defining MEPS in the absence of national market data



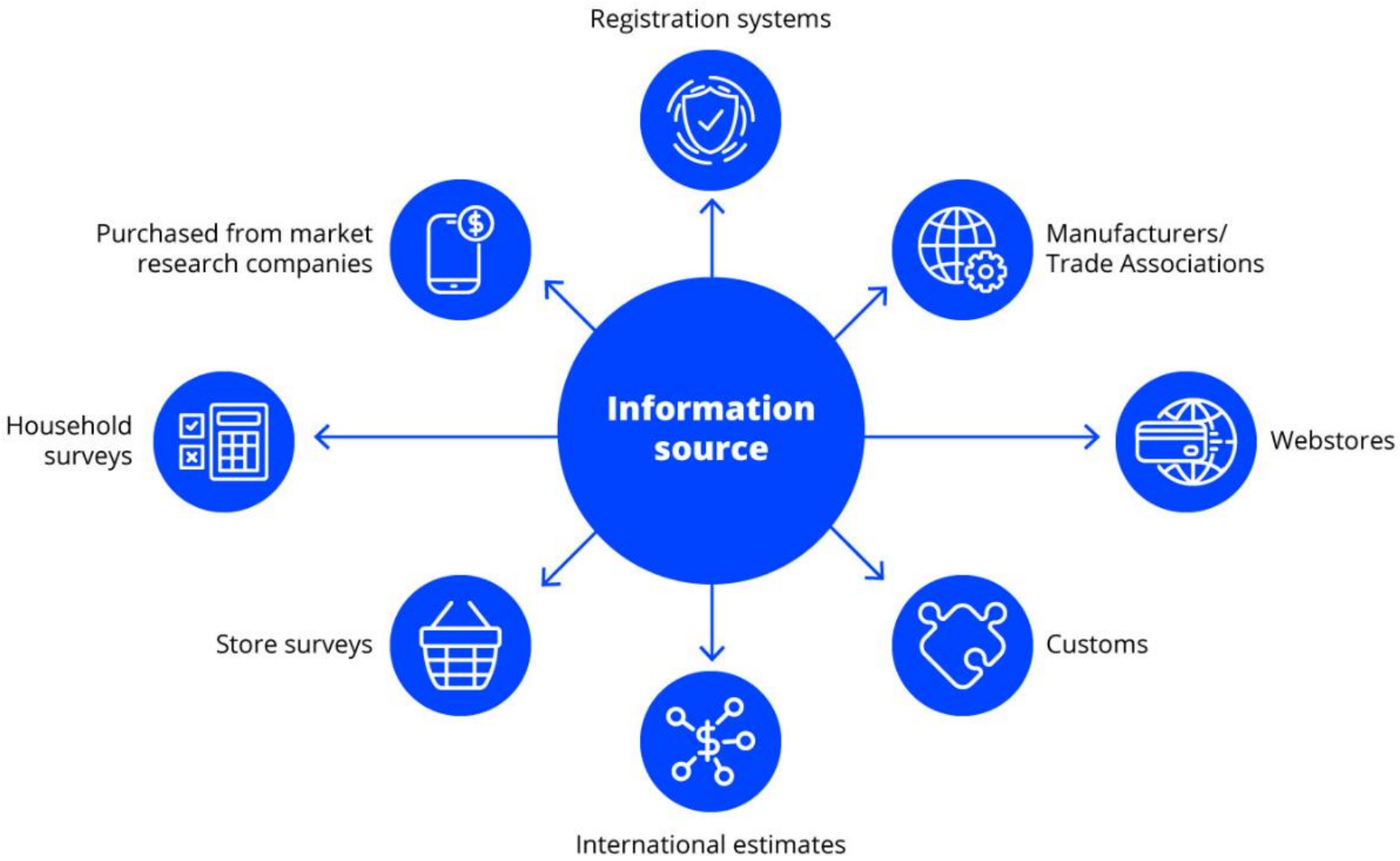
Policy design without appropriate data may not be optimal

Efficiency rating of selected air conditioners in national/regional market – data collected after MEPS



Without appropriate data, minimum energy performance levels were set too low to impact the market

Information Source



What's on the market? Registration system data

Help on Headings | Data Dictionary

Australian Government
Department of the Environment and Energy

Greenhouse and Energy Minimum Standards Regulator

EECA Energy Efficiency and Conservation Authority Te Tari Tiaki Pūngao

Cost Calculator

Basic Search

Advanced Search

Product

Air Conditioners

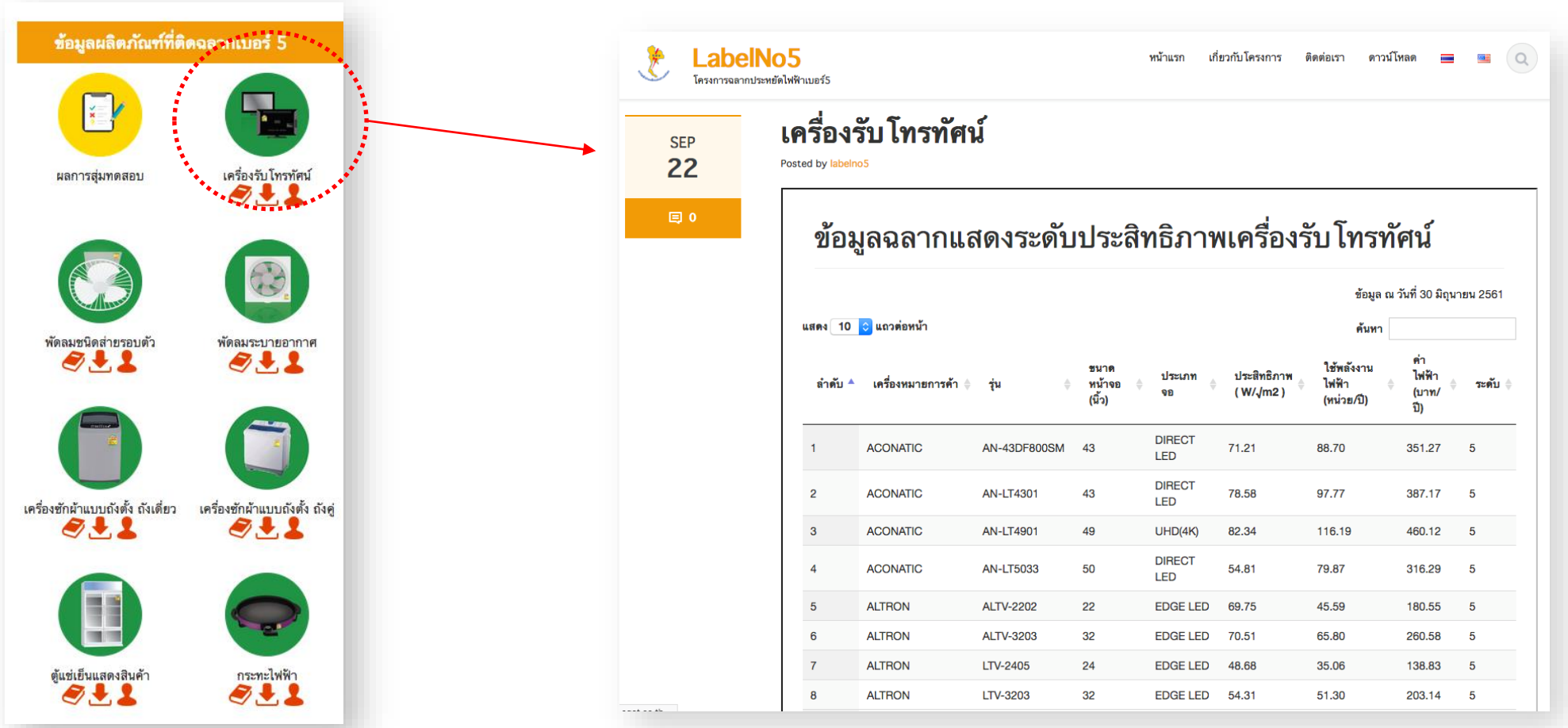
Click the column header to sort the table. The table is currently sorted descending by Star Rating

Cooling

Calculator Result	Brand	Model	Installation Type	Indoor air distribution	Phase	Available	Country of Manufacture	Star Rating	Output (kW)	Power Input (kW)	Star Rating
N/A	MITSUBISHI HEAVY INDUSTRIES	SRK20ZSXA-W	Single Split System	Non Ducted	Single	Australia,Fiji,New Zealand	Thailand	7.0	2.00	0.31	7.0
N/A	DAIKIN	FTXZ25N / RXZ25N	Single Split System	Non Ducted	Single	Australia,New Zealand	Japan	7.0	2.50	0.42	7.0
N/A	MITSUBISHI HEAVY INDUSTRIES, LTD.	SRK20ZMXA-S / SRC20ZMXA-S	Single Split System	Non Ducted	Single	Australia,Fiji,New Zealand	Thailand	6.0	2.00	0.35	5.5

Registration data provides a complete snapshot of the market

What's on the market? Registration data are available in many markets



ลำดับ	เครื่องหมายการค้า	รุ่น	ขนาดหน้าจอ (นิ้ว)	ประเภทจอ	ประสิทธิภาพ (W/√m2)	ใช้พลังงานไฟฟ้า (หน่วย/ปี)	ค่าไฟฟ้า (บาท/ปี)	ระดับ
1	ACONATIC	AN-43DF800SM	43	DIRECT LED	71.21	88.70	351.27	5
2	ACONATIC	AN-LT4301	43	DIRECT LED	78.58	97.77	387.17	5
3	ACONATIC	AN-LT4901	49	UHD(4K)	82.34	116.19	460.12	5
4	ACONATIC	AN-LT5033	50	DIRECT LED	54.81	79.87	316.29	5
5	ALTRON	ALTV-2202	22	EDGE LED	69.75	45.59	180.55	5
6	ALTRON	ALTV-3203	32	EDGE LED	70.51	65.80	260.58	5
7	ALTRON	LTV-2405	24	EDGE LED	48.68	35.06	138.83	5
8	ALTRON	LTV-3203	32	EDGE LED	54.31	51.30	203.14	5

How similar is your market?

What's on the market? Registration data are available in many markets

The India Case

Model	ALL
EER	ALL
Nominal marketing capacity	ALL
star rating	ALL

Export to PDF

S.No	Brand Name	Type	Model Number	EER (W/W)	Nom. Marke. Cap. (Ton)	Coling Cap. (W)	Power Cons. (W)	Approval Date	Valid Till Date	
1	HITACHI	Split air conditioner	RAU518HSDG	3.4	1.5	5410	1590	19-12-2013	31-12-2015	
2	HITACHI	Split air conditioner	RAU318KSD	3	1.5	5200	1735	26-12-2013	31-12-2015	
3	HITACHI	Split air conditioner	RAU312KSDC	3.09	1.0	3371	1090	26-12-2013	31-12-2015	
4	HITACHI	Cassette air conditioner	MRAG518HSD	3.2	1.5	5400	1685	27-02-2012	27-02-2015	
5	HITACHI	Split air conditioner	RAU318KSD-CH	3	1.5	5200	1735	26-12-2013	31-12-2015	
6	HITACHI	Split air conditioner	RAU318KSD-GD	3	1.5	5200	1735	26-12-2013	31-12-2015	
7	HITACHI	Split air conditioner	RAU324HSDA	3	2.0	6950	2320	24-12-2013	31-12-2015	
8	HITACHI	Split air conditioner	RAU318KSDC	3.09	1.5	5275	1705	26-12-2013	31-12-2015	
9	HITACHI	Window air Conditioner	RAV322HSD	2.8	2.0	6160	2200	26-12-2013	31-12-2015	

Question

Do you have a registration system for appliance data in your country?
If there is one in your country: what are the strengths and weaknesses of the registration system?
If there isn't one in your country: Do you think it would be valuable to have one?

Commerical Market Data

Commercial market research data on Air Conditioners

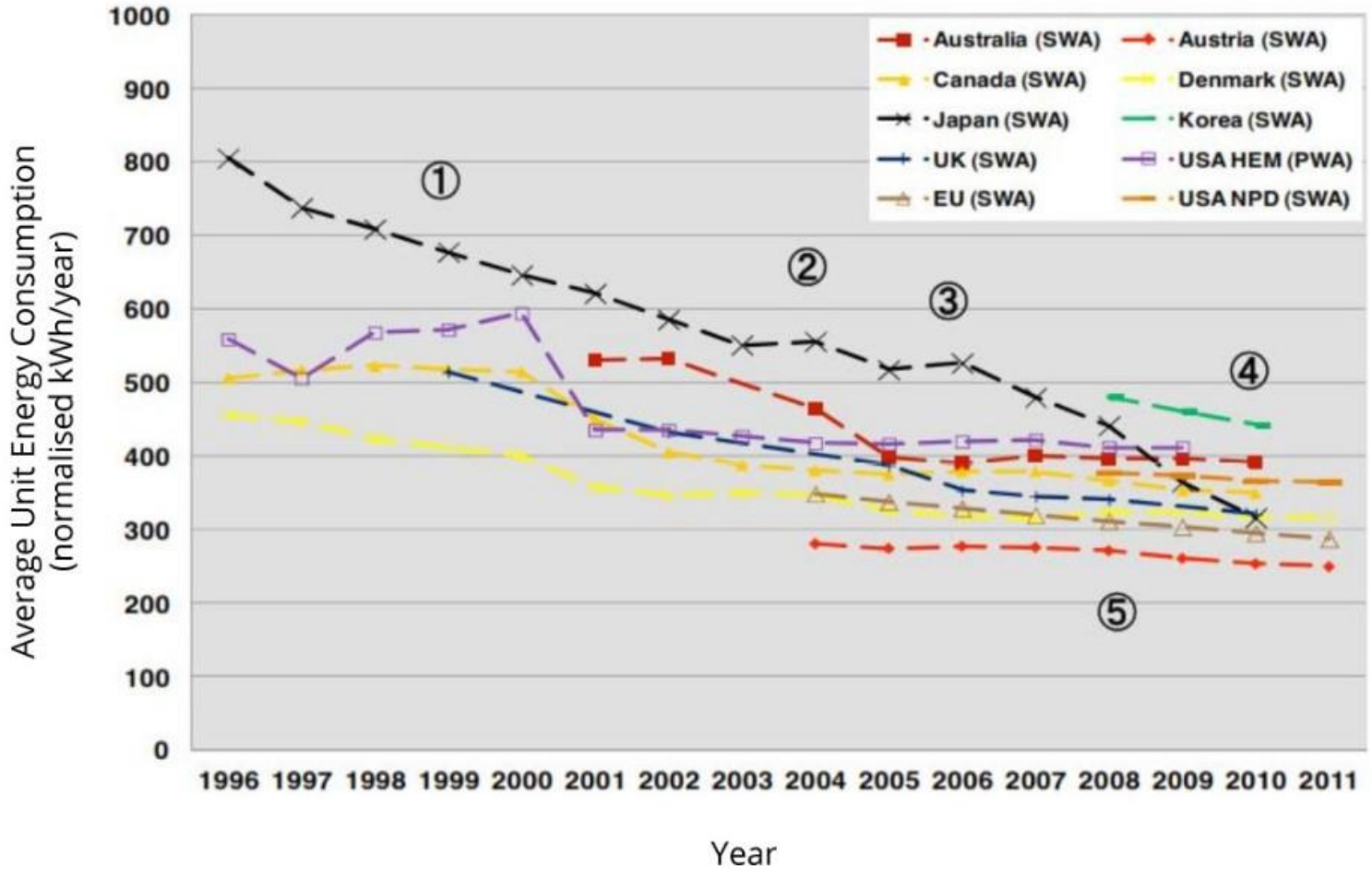
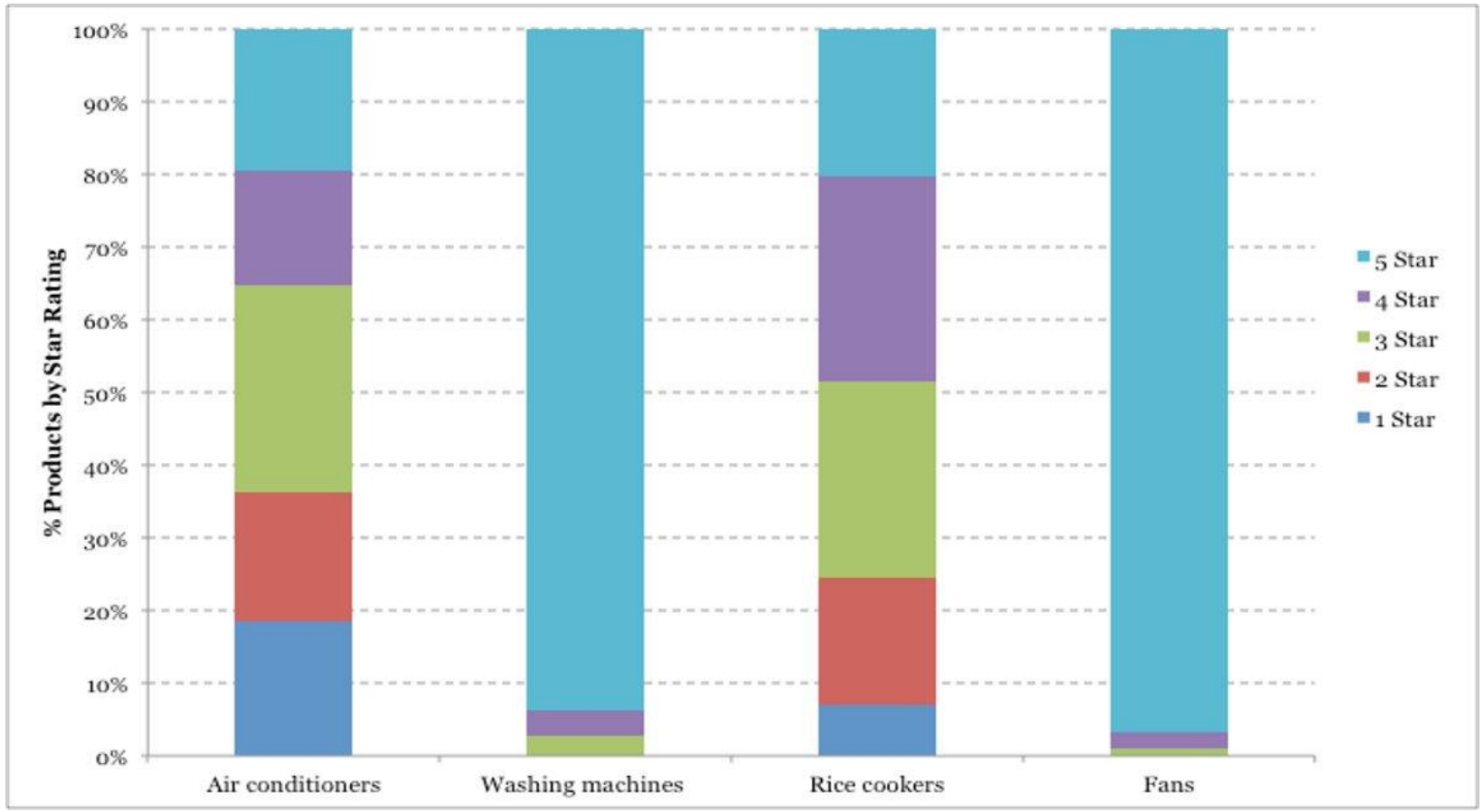


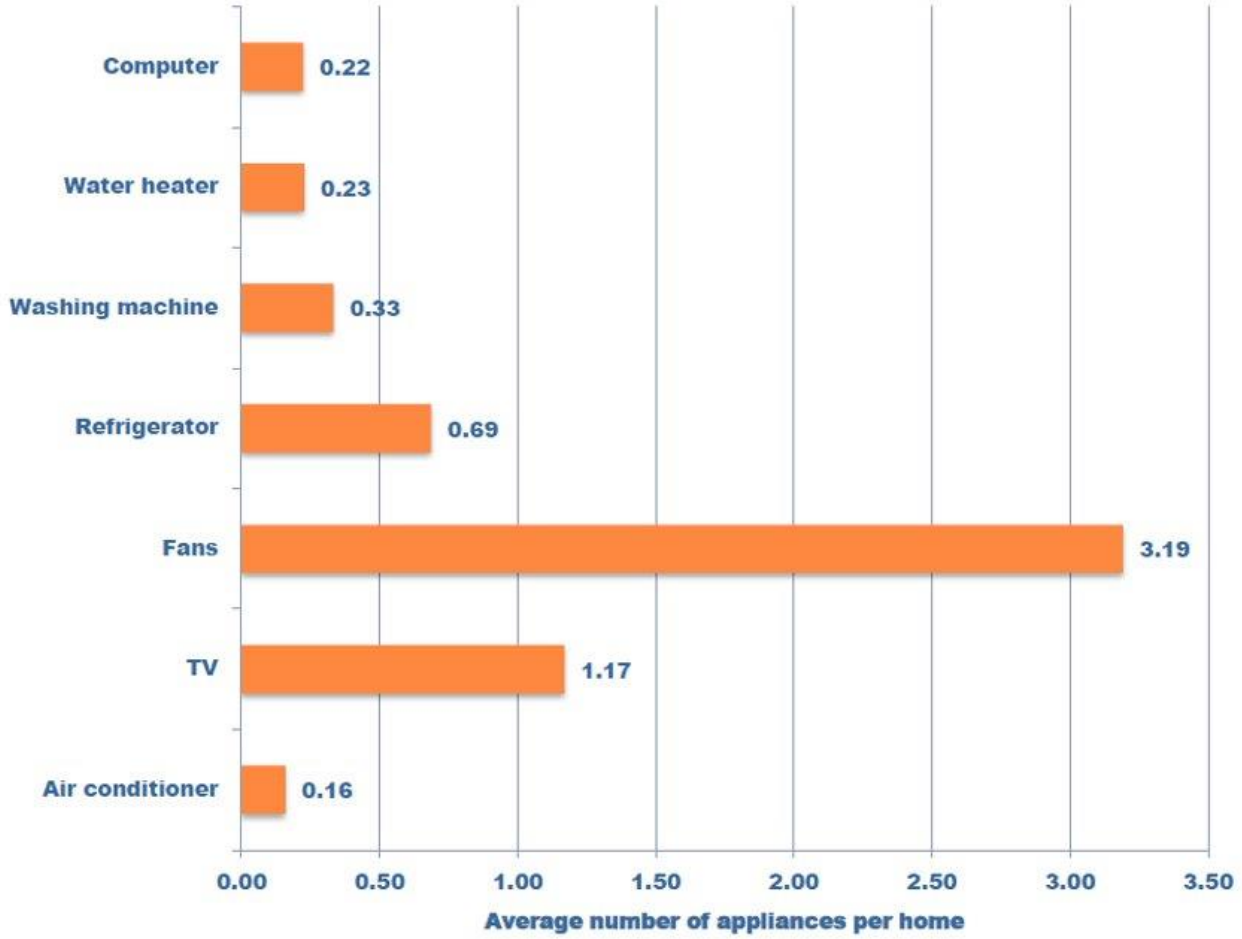
Image: Source IEA 4E Benchmarking Report for Air conditioners, 2011. All rights reserved.

Store survey: Vietnam



Source: Vietnam Energy Efficiency Standards and Labelling Programme

Household Survey: Viet Nam



Source: Vietnam Energy Efficiency Standards and Labelling Programme

Applications: Allowing Data on-Demand

PREMISE

Define Requirement

Set objectives, refine geographic parameters, determine time series, design tasks, and target population segments.

Task the Network

Premise review of tasks, language localization, translation, and task dissemination to the contributor marketplace at market rates.

Time – Hours to Days

Visualise & Deliver

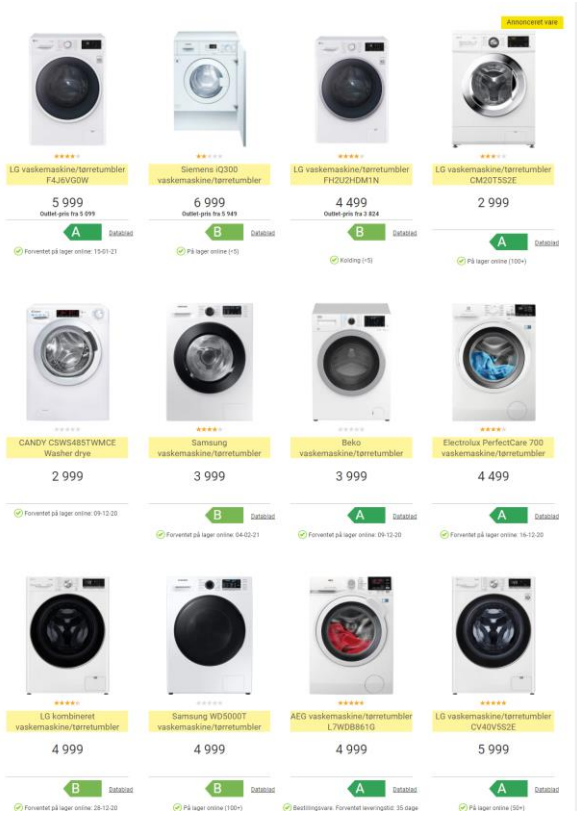
Source: Premise

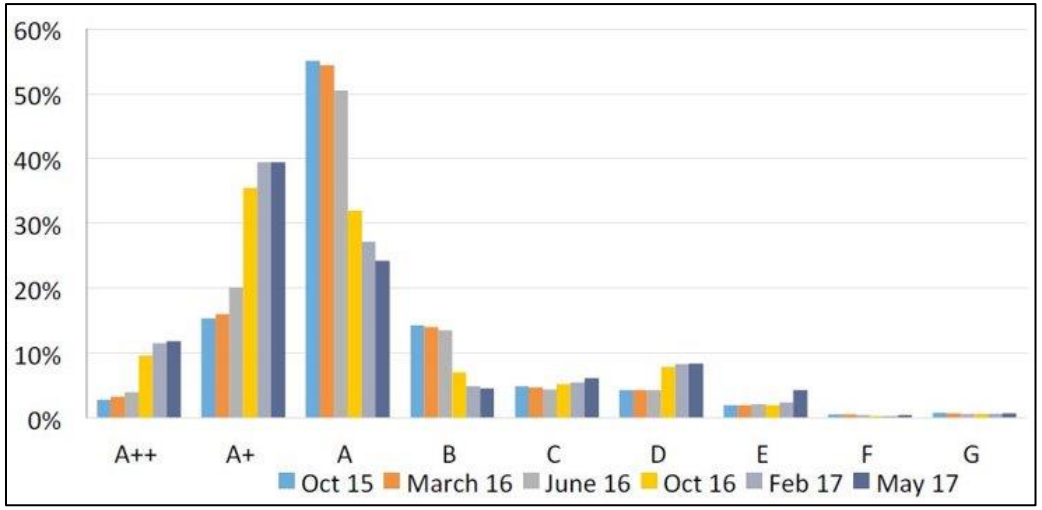
Using Internet Data: Web Crawling

Possible to follow the market in real time, and over time

Information on:

- Adaptation patterns
- Speed at which the market evolves
- Market compliance rate – allowing the regulator to focus on risks
- Find retail pages where products have missing labels
- Evaluate current MEPS levels





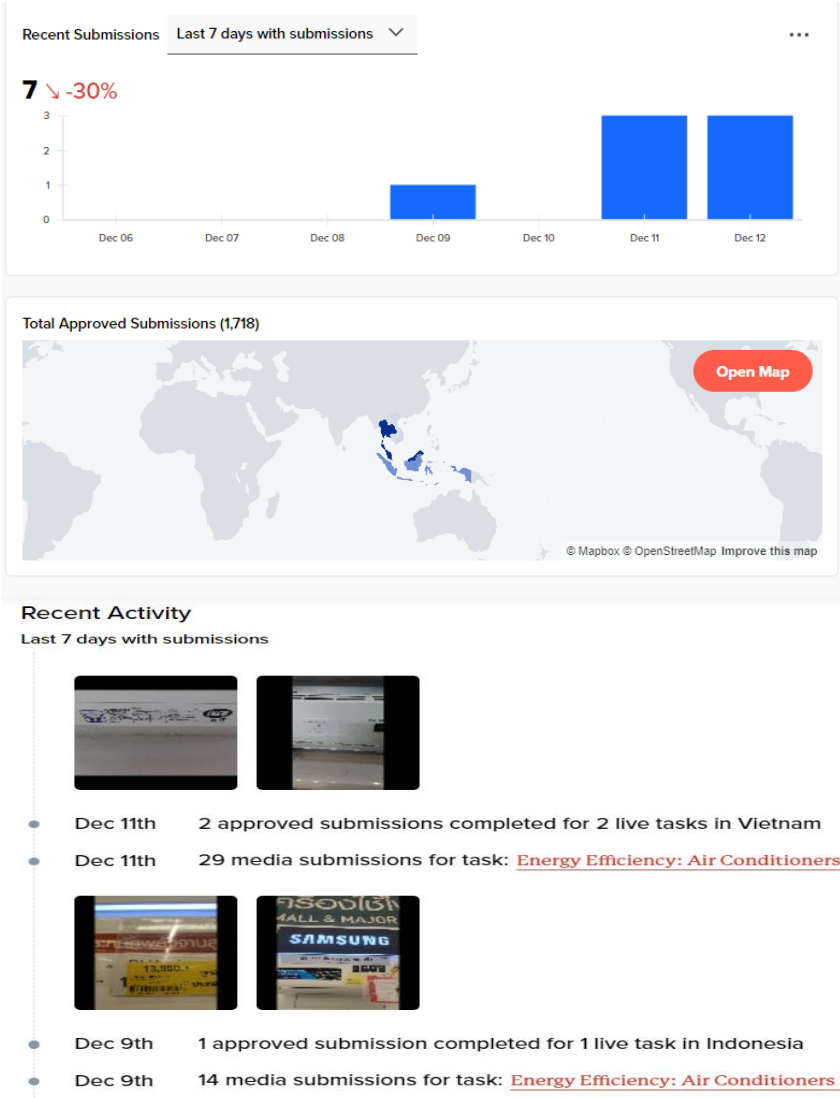
Source: Big2great

Web-Crawling: Can glimpse the market at any instance

Source: Swedish Energy Agency

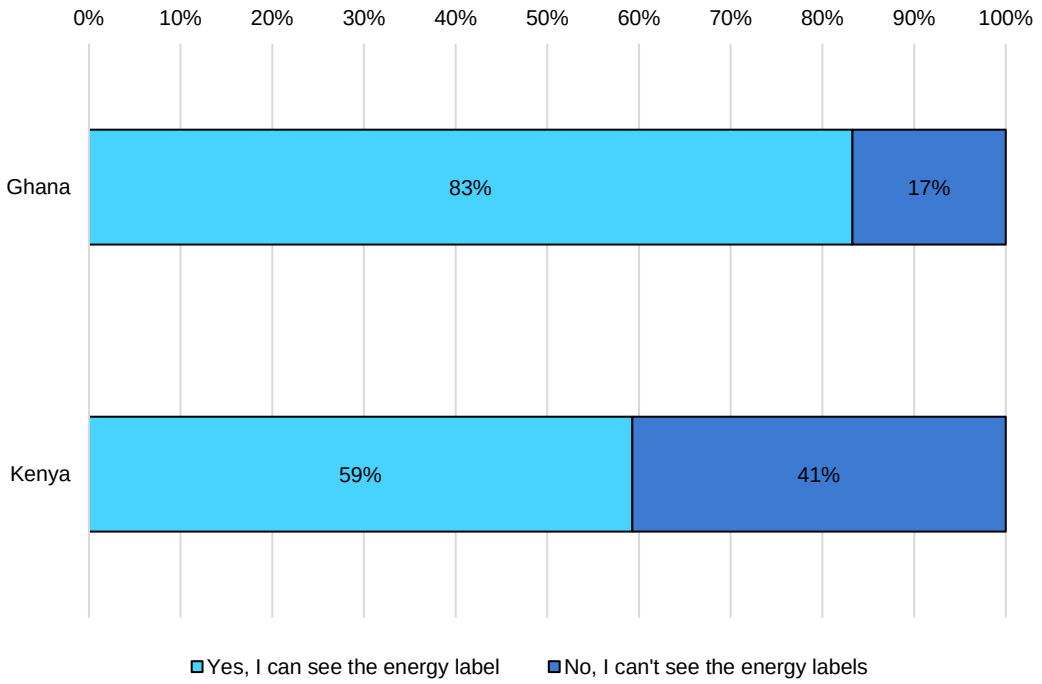
General overview

- Purpose: gain market insights on (1) efficiency distribution of new products for sale, and (2) price versus its efficiency curve.
- Countries: Indonesia, Philippines, Thailand, Viet Nam and Malaysia.
- Products: Air conditioners, refrigerators and fans.
- Data collection method: crowd sourcing
- Total Approved Submissions: 1,718
- Data points collected: all information comprised the energy label per product/country, including:
  - Country
  - Product type and brand
  - Capacity/size (e.g. cubic feet refrigerators in Thailand)
  - Stars rated in the energy label (e.g. 1-5 for ACs in Malaysia)
  - Price (in USD)
  - Energy consumption (e.g. kWh/24h for refrigerators)
  - Energy Efficiency rating (e.g. in m3/minute/Watt for Fans in Viet Nam)



Air conditioners general overview for Ghana and Kenya

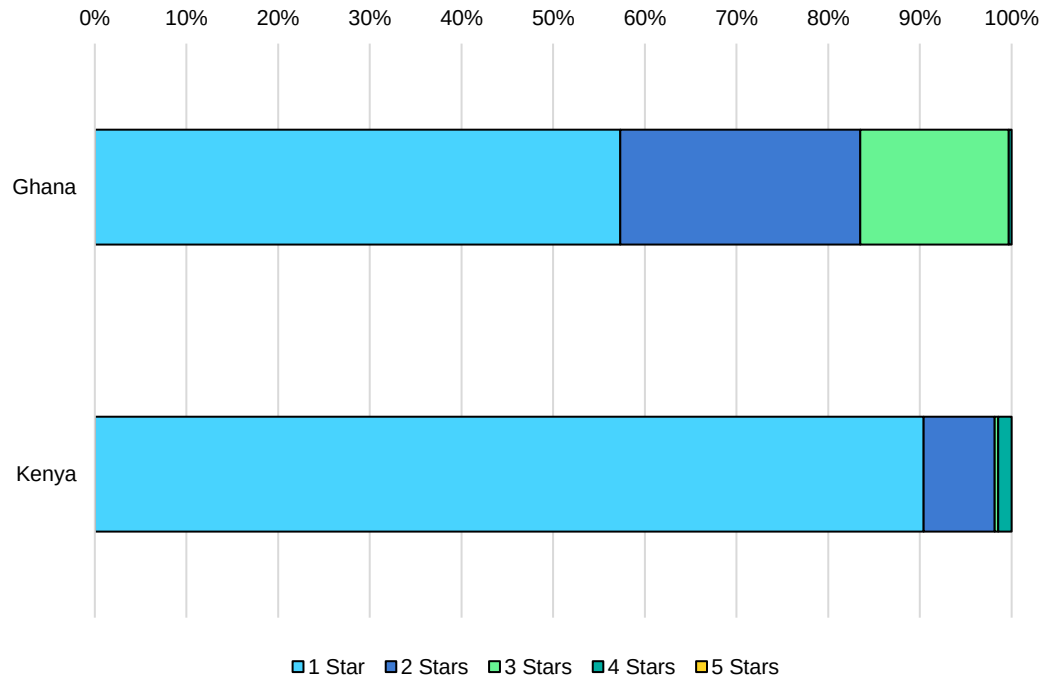
Air Conditioner's energy label visibility Ghana and Kenya, 2023



Notes: The number of samples for Ghana is 425, and Kenya is 459

Energy labels on air conditioners are prominently displayed on products in Ghana. However, in Kenya, while the labels are visible, a significant portion of them remains not visible.

Air conditioner's energy stars rating distribution in Ghana and Kenya, 2023

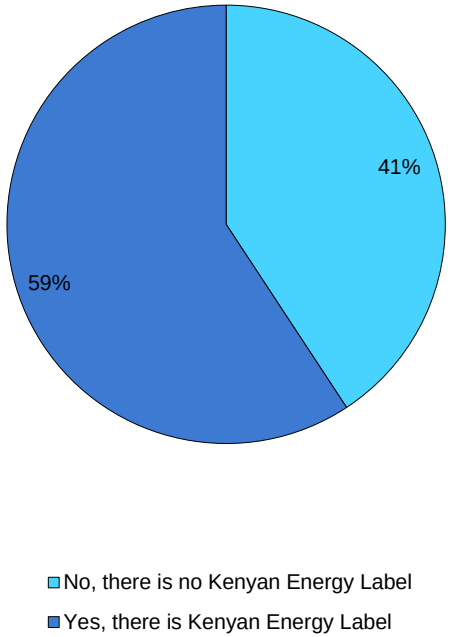


Notes: The number of samples for Ghana is 321, and Kenya is 271

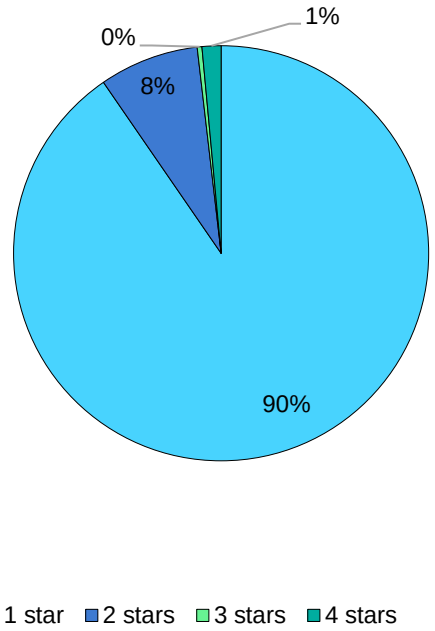
In Ghana, a notable proportion of products have 2 and 3 rating stars, but the majority are rated at 1 star. In contrast, the air conditioner market in Kenya is largely dominated by 1-star-rated products.

Kenya air conditioners overview

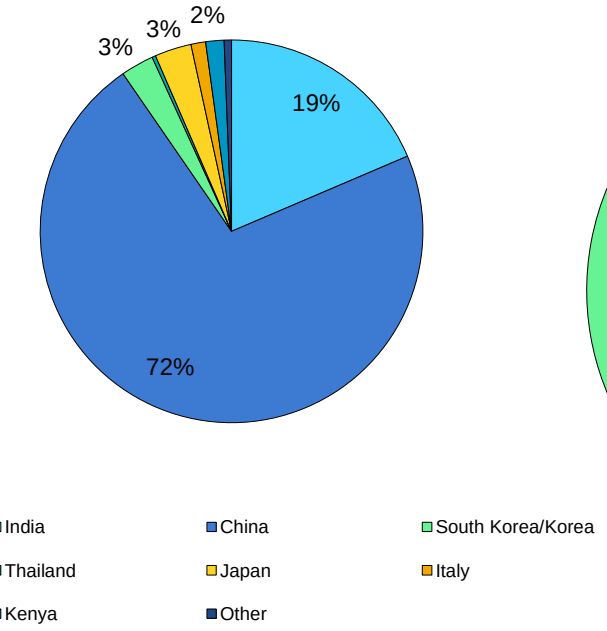
Air Conditioner’s energy label visibility in Kenya, 2023 (n=459)



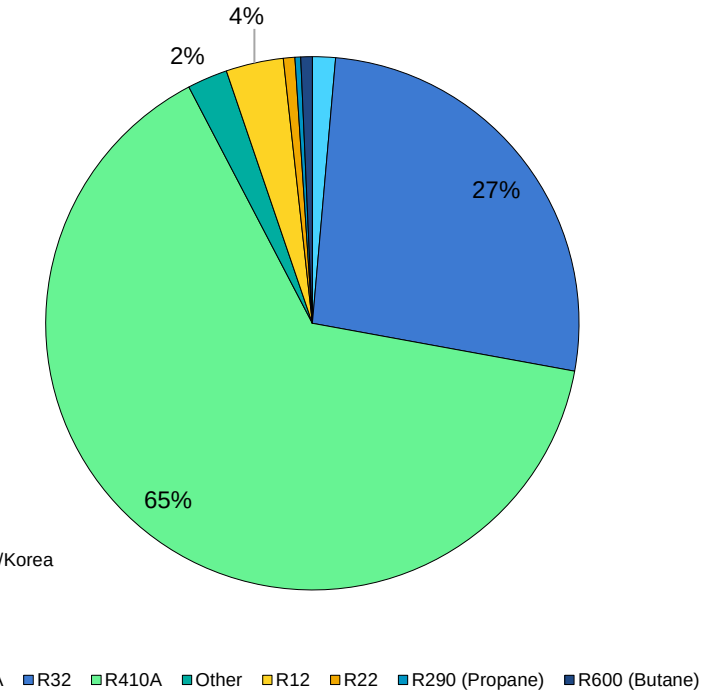
Air conditioner's energy stars distribution in Kenya, 2023 (n=271)



Air conditioners manufacturer origins in Kenya*, 2023 (n=321)



Air conditioner's refrigerant in Kenya*, 2023 (n=280)



In Kenya, while the labels are visible, a significant portion of them remains not visible.

The air conditioner market in Kenya is largely dominated by 1-star-rated products.

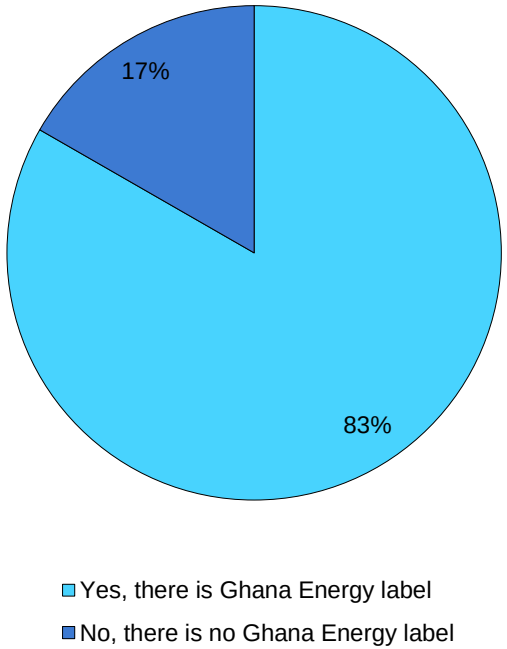
In Kenya, the origin of air conditioners is primarily China.

In Kenya, the use of refrigerant for air conditioners is predominantly centred around R410A.

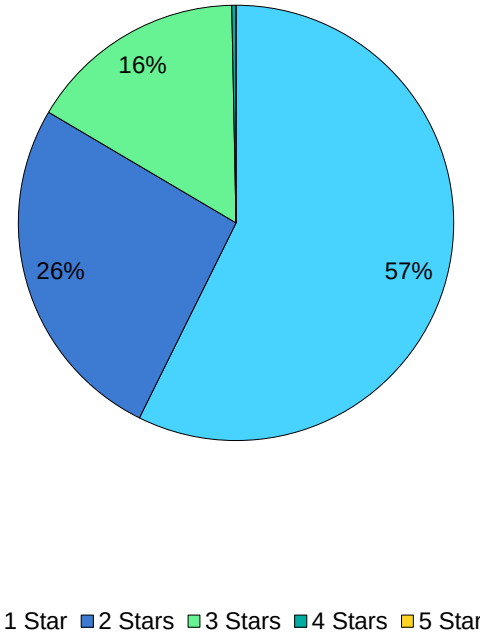
***This information is not sourced from the energy label, and may need secondary research to confirm the result**

Ghana, air conditioners

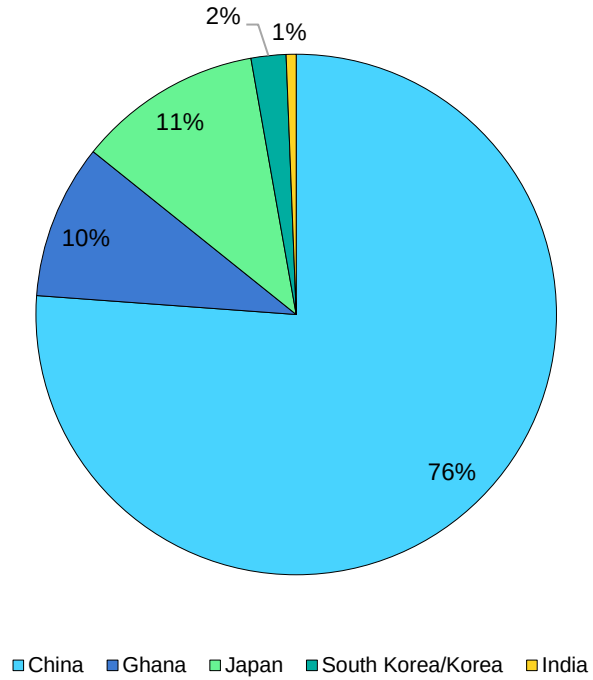
Air Conditioner’s energy label visibility in Ghana, 2023 (n=425)



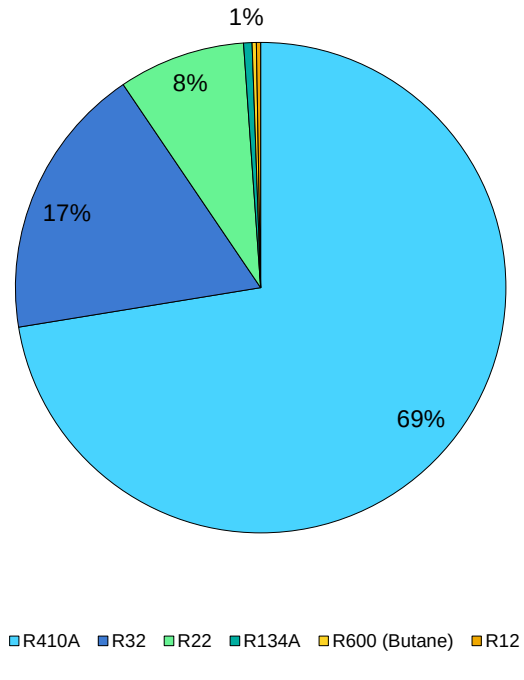
Air conditioner's energy stars distribution in Ghana, 2023 (n=321)



Air conditioners manufacturer origins in Ghana*, 2023 (n=323)



Air conditioner's refrigerant in Ghana*, 2023 (n=280)



Energy labels on air conditioners are prominently displayed on products in Ghana

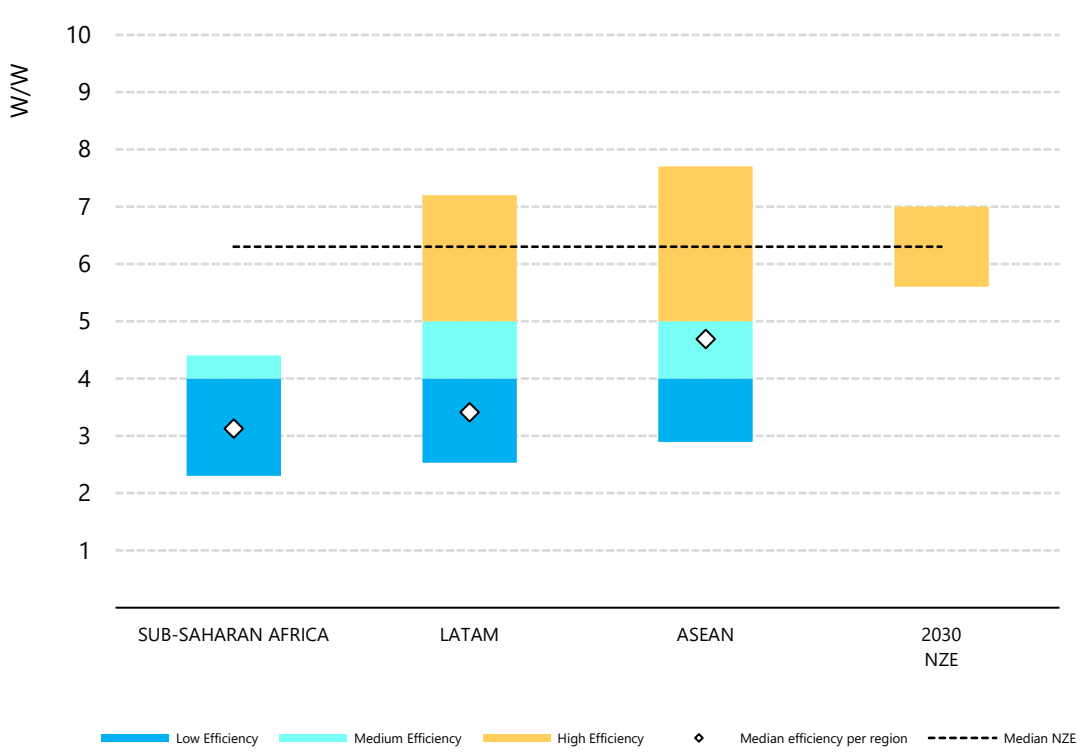
In Ghana, a notable proportion of products have 2 and 3 rating stars, but the majority are rated at 1 star.

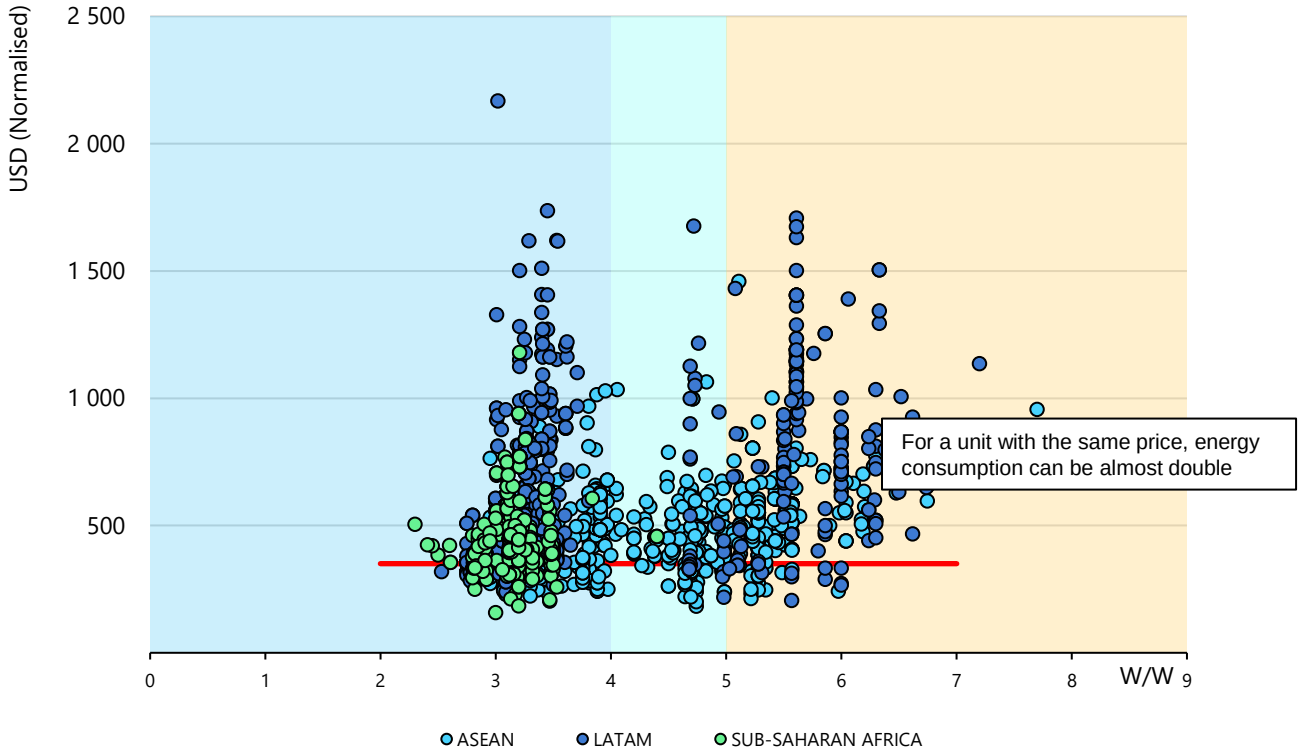
In Ghana, the origin of air conditioners is primarily China.

In Ghana, the use of refrigerant for air conditioners is predominantly centred around R410A.

***This information is not sourced from the energy label, and may need secondary research to confirm the result**

Air conditioners efficiency and cost in developing regions





The average efficiency of air conditioners rises by 60% in emerging economies over 2022-30 in the NZE Scenario, but a very efficient models are already available today at similar cost

Notes: ASEAN, including Indonesia, the Philippines, Thailand, and Vietnam, in late 2022. LATAM, including Argentina, Brazil, Colombia, Mexico, and Panama. Sub-Saharan Africa, including Ghana, Kenya, and South Africa. Purchase prices are normalised to 12 000 BTU/hour cooling capacity. Low efficiency = below 4 W/W; Medium efficiency = 4-5 W/W; High efficiency = above 5 W/W. BAT = best available technology

Policy influence

- Feed into **policy reviews of when and how to revise MEPS and labels** (e.g. identify opportunities to push manufacturers to produce more efficient products)
- Provide **evidence for the evaluation of MEPS and labels** (e.g. how long does it take since MEPS and labels are enforced until it is reflected in the market)
- Strengthens **market surveillance** (e.g. collecting information on what products are being sold)

The market cost-efficiency curves have been published/shared in the Indonesia policy paper, 2022 Energy Efficiency market report, Latin America and sub-Saharan training weeks, Communications with SEAD member governments (e.g. Latin America Pathway) and numerous presentations.

Future uses: WEO (e.g. special report on Latin America), TCEP Appliances, ETP, training.

You are asked to revise and increase the levels of existing MEPS for all appliances.

Discussion question: What market data would you need to ensure an effective revision?

Resources

- Department for Levelling Up, Housing and Communities UK, English Housing Survey Headline Report, 2020-21 https://www.gov.uk/government/collections/english-housing-survey

- CLASP, Ipsos, Indonesia Residential End Use Survey Final Report, 2020 https://www.clasp.ngo/research/all/indonesia-residential-end-use-survey-2/

- Eurostat, Manual for statistics on energy consumption in households, 2013 https://ec.europa.eu/eurostat/web/products-manuals-and-guidelines/-/ks-gq-13-003

- IEA (2023), Keeping cool in a hotter world is using more energy, making efficiency more important than ever, IEA, Paris https://www.iea.org/commentaries/keeping-cool-in-a-hotter-world-is-using-more-energy-making-efficiency-more-important-than-ever, Licence: CC BY 4.0

International Energy Agency

Understanding the Southern African market data - data needs and data collection methods

Asteria Markus, EELA/SACREEE

Nairobi, 19 March 2024

Presentation outline

1. About SACREEE
2. About REEESAP and Data requirements
3. Available data on SACREEE website
4. Market studies conducted
5. Key Definitions
6. Determining data needs and stakeholders for market assessment
7. Methods of data collection and their challenges
8. Best practices for regional data collection
9. Conclusion and key take aways

1. Background on SACREEE

- SACREEE was established in 2015 by the **SADC Energy Ministers** with a mandate to promote:
  - increased access to modern energy services
  - improved energy security across the SADC Region,

  through the promotion of market-based adoption of
  - renewable energy,
  - energy efficient technologies and
  - energy services.

  In 2017, SADC Energy Ministers mandated SACREEE to support SADC Secretariat in monitoring the implementation of the **Regional Renewable Energy and Energy Efficiency Strategy and Action Plan (REEESAP, 2017-2030)**.

SACREEE is a subsidiary organization of **SADC,** comprising **16 Member states**

SACREEE is established through an **Inter-Governmental Memorandum of Agreement (IGMoA)**

Areas of intervention

- SUSTAINABLE ENERGY POLICY
- CAPACITY BUILDING
- KNOWLEDGE MANAGEMENT
- FINANCING AND INVESTMENTS

Partnerships are key! The SACREEE funders on establishment include

AUSTRIAN DEVELOPMENT COOPERATION

UNIDO

GN SEC Global Network Regional Sustainable Energy Centres

2. About REEESAP and Data Requirements

Some of the key strategic objectives from REEESAP are to:

- achieve energy security by closing the current supply/demand deficit largely in the power sector and enabling future economic growth and industrialization;
- increase availability, accessibility and affordability of modern energy services particularly to the poor that largely depend on inefficient traditional forms of energy in order to enhance their socio-economic status and hence alleviate poverty;
- achieve low carbon development paths and climate resilient energy systems in MS and hence the Region.

SACREEE indicators for data collection.

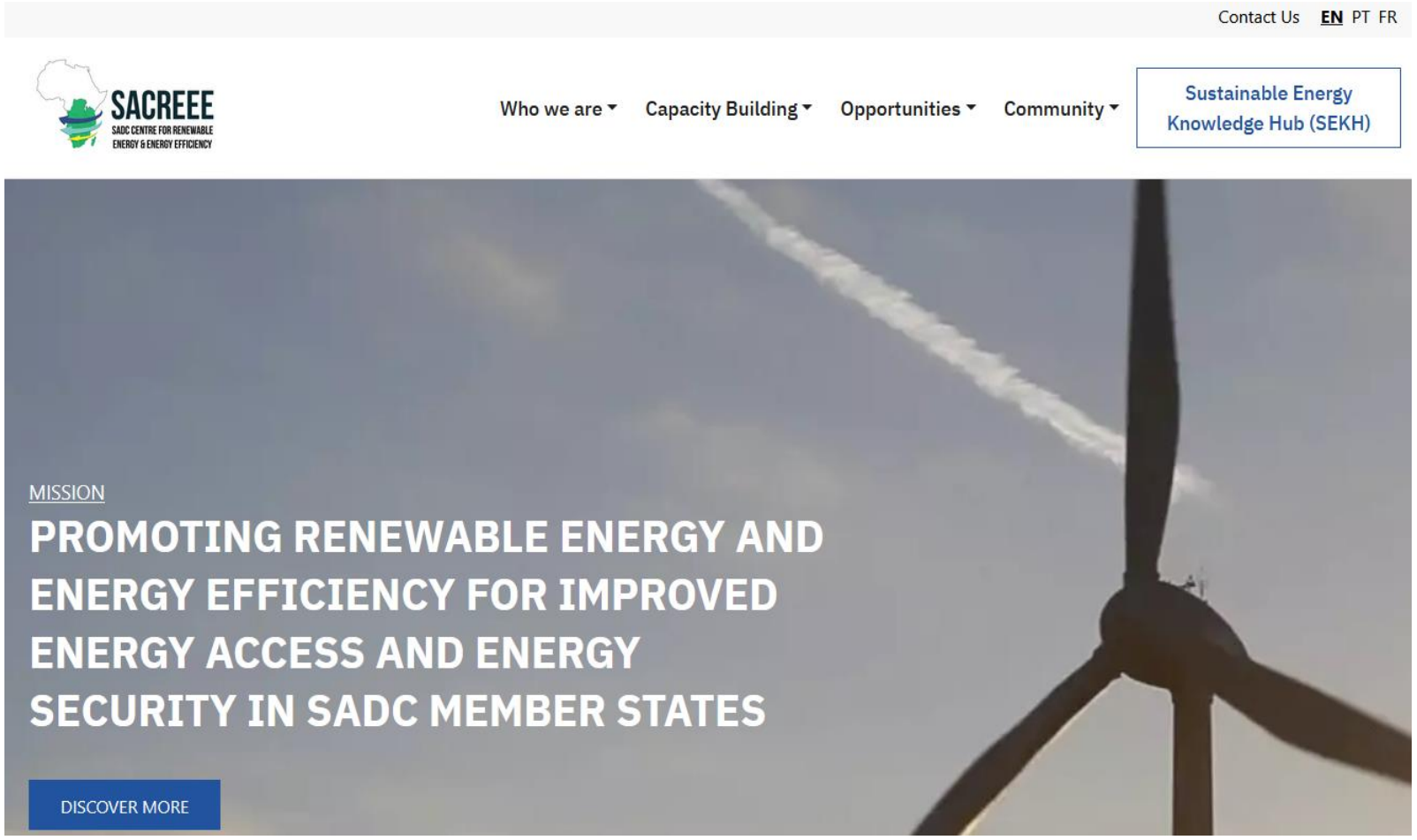
Action plans to achieve these objectives are framed along the following strategic interventions:

- Strengthen national and regional institutions to adopt and implement RE/EE projects;
- Create policies, strategies, plans and other frameworks to ensure an enabling environment for RE/EE investments;
- Have appropriate regulation and standardization frameworks for RE/EE projects and investments;
- Attract private sector participation in investments for RE and EE;
- Build capacity to design, develop, build, implement and maintain RE/EE projects
- Consider cross-sectoral and cross cutting issues when implementing RE/EE projects

Guiding documents are key to ensure that the data collected is in line with your strategic interventions.

3. Available data on SACREEE website

- *SADC 2018 Renewable Energy and Energy Efficiency Status Report* - showcase RE and EE development, policy trends and investment opportunities within the SADC Region. Available in 3 SADC official languages (English, French and Portuguese). Intended to be developed biannually but it was not possible due to lack of funds.
  Geographical Scope: All the 16 SADC Member States



https://www.sacreee.org/index.php/resources/publications?page=1

4. Market Studies Conducted

Projects

Projects aiming to put in place Regional Harmonised Minimum Energy Performance Standards (MEPS), Compliance, Procurement Guidelines labelling scheme, Regional testing capacity – establishing laboratories to create an enabling policy and regulatory environment for general lighting, refrigerators, air conditioners, productive use appliances and distribution transformers in Southern Africa.

Details:

- https://eela-project.org/
- https://united4efficiency.org/country-regional-activities/eac-sadc/
- https://www.sacreee.org/index.php/project/gcf-readiness-projects-southern-africa-national-frameworks-energy-efficient-appliances

Resources

ENERGY EFFICIENT LIGHTING AND APPLIANCES
Southern and Eastern Africa

CONSOLIDATED REPORT FOR EAC AND SADC REGIONS

AN ASSESSMENT OF THE MARKET FOR PRODUCTIVE USE OF ENERGY APPLIANCES

A report prepared within the project on Energy Efficient Lighting and Appliances in East and Southern Africa (EELA).

- *Market study on lighting products under Energy Efficient Lighting and Appliances project in EAC and SADC (EELA) covering 21 countries*
- *Market study on refrigerators and Air conditioners covering 21 countries - U4E-EELA collaboration*
- *Market study on productive use appliances under EELA*
- In progress: Market assessment for e-waste management under the EELA focussing lighting, cooling and productive use appliances in the on-and off-grid space in the EAC and SADC regions
- *Market assessment reports for energy efficient residential refrigerators and distributed transformers for Malawi, Namibia, Zambia and Zimbabwe under GCF Readiness Projects in Southern Africa*

DATA	INFORMATION
Data – raw facts with no specific meaning. Derived from Latin word ‘datum’ meaning something given. Data is quantitative (numerical data that can be counted or measured in numerical values e.g height, age, etc) or qualitative (non-numerical data that cannot be counted e.g text, audios, images, etc) variables used to generate ideas or solutions. Data is not enough to make decisions.	**Information** – processed data that has purpose and meaning. Information is derived from Latin word ‘ínformatio’ meaning formation or conception. Information is processed data - dependent on data. Information is sufficient to help resolutions in the respective context.

Source: https://www.tutorialsmate.com/2021/11/difference-between-data-and-information.html

Data is meaningless without defining its purpose context.

Market assessment involves the processing of data into information for strategic planning/decision making.

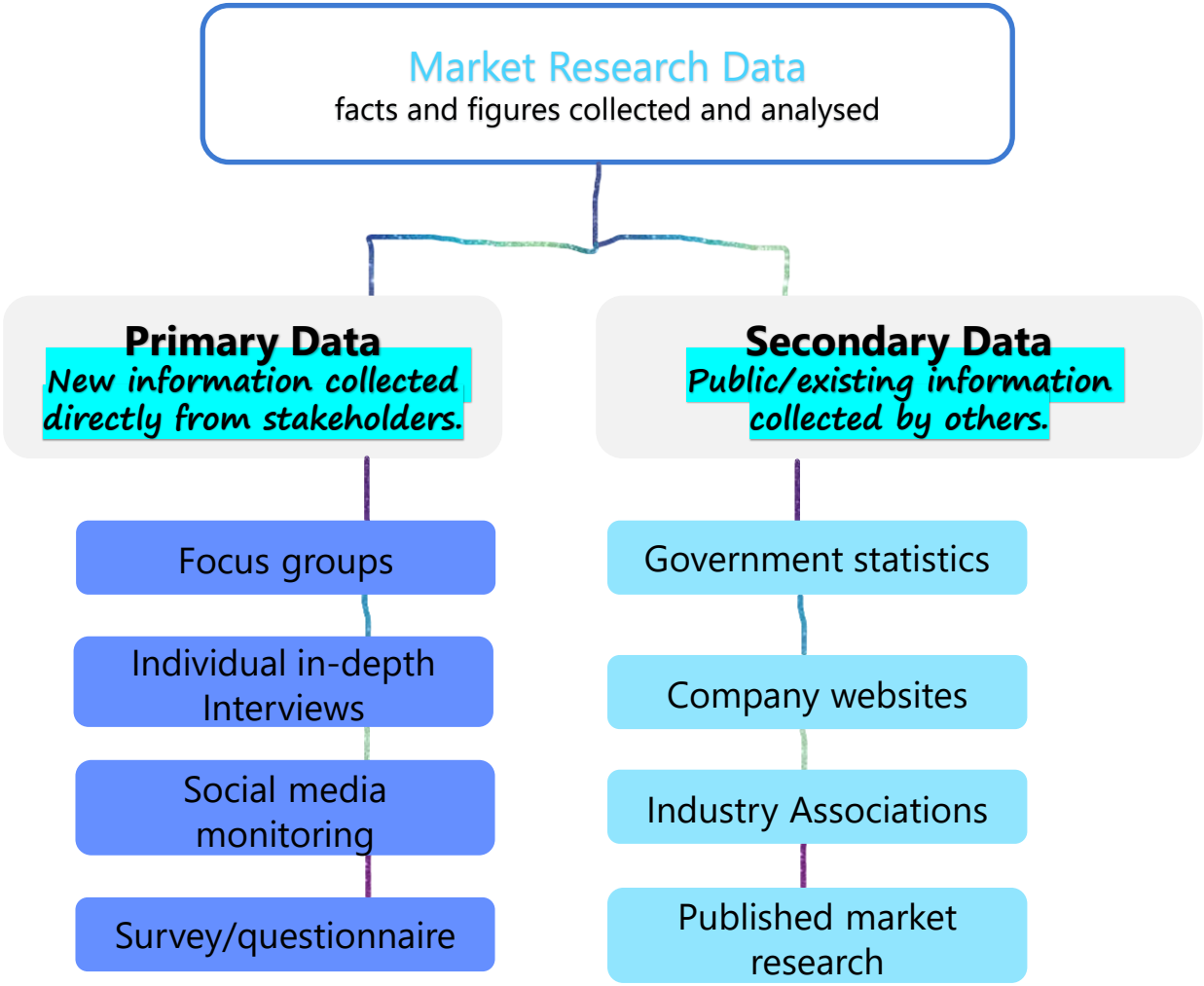
6. Determining data needs and stakeholders for market assessment

Need assessment	Market research	Stakeholders mapping
The objective: Transforming the market for an enhancement of energy efficient products uptake.	The use: assessing feasibility of market transformation before committing funds; gathering data about both current and prospective market - selection of priority products.	Who is being assessed: Government institutions, standard bodies, test laboratories, private sector, NGOs, Civil Societies, Associations

7. Methods of data collection and their challenges

Types of Qualitative or Quantitative Data Collection Methods

1. Closed / Open-Ended Surveys and Questionnaires
2. Audio and Video Recordings
3. Interviews
4. Focus Groups
5. Observation
6. Case Studies
7. Text Analysis
8. Hybrid Methodologies



The selection of your data collection methods depends on your objective and the types of data needed.

7. Data collection methods and challenges – Case of Cooling Appliances

Questionnaires/Interviews/observation

Challenges:

- No responses / delayed / incompleteness / unavailability of interviewee / restricted data access for usage or sharing / internet connectivity in some countries

Resulting from:

- limited human capacity in targeted institutions and competing priorities
- Lack of understanding – language barrier or context
- Lack of interest or conflict of interest
- inconsistent in country and regional data mostly arising from data collection methods and ambiguities

Table 3: Received questionnaires from country officials

Country	Organisation and Completeness of Questionnaire in (%)
Botswana	• Department of Energy (90%)
Burundi	• Ministry of Hydraulics, Energy and Mines (80%) • Bureau Burundais de Normalisation en Contrôle de la Qualité (Standards Body, 90%)
Comoros	• Ministry of Economy, Investments and Energy; in charge of Economic Integration, Tourism and Handicrafts (60%)
Congo (Dem. Rep. of the)	• Ministère des Ressources Hydrauliques et Electricité (Ministry of Hydraulic Resources and Energy, 80%)
Eswatini	• Ministry of Natural Resources and Energy (30%)
Kenya	• Kenya Bureau of Standards (55%) • Energy and Petroleum Regulation Commission of Kenya (56)
Lesotho	• Ministry of Energy and Meteorology (30%)
Malawi	• Department of Energy Affairs (50%)
Mauritius	• Energy Efficiency Management Office (90%)
Mozambique	• Autoridade Tributaria – Direccao General das Alfandegas (Tax Authority, General Directorate of Customs, 100%) • Ministério da Terra, Ambiente e Desenvolvimento Rural (Ministry of Land and Environment, 40%)
Namibia	• Ministry of Mines and Energy (80%)
Rwanda	• Rwanda Standards Board (75%)
Seychelles	• Seychelles Energy Commission (90%)
South Africa	• Department of Minerals Resources and Energy (100%)
South Sudan	• Ministry of Energy and Dams (59%)
Uganda	• Uganda National Bureau of Standards (47%) • Ministry of Energy and Mineral Development (67%)
Zimbabwe	• Ministry of Energy and Power Development (70%)

Table 4: Received questionnaires from private stakeholders

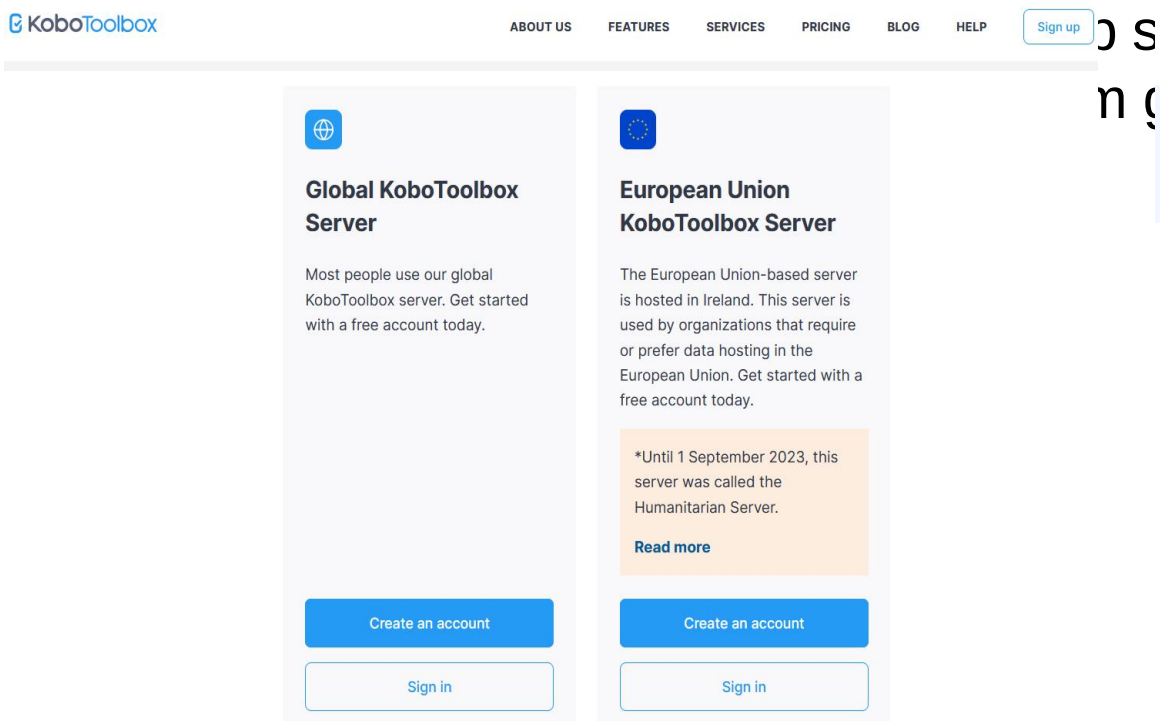
Private Sector Stakeholder and Completeness of Questionnaire in (%)	Type of Business	Active country/ies
The Fridge Factory (80%)	Manufacturer	Eswatini
Armco Kenya Limited (40%)	Distributor, Retailer	Kenya
Samsutech Corporation LTD (30%)	Distributor	Kenya
Gilfilian Air Conditioning LTD (10%)	Retailer	Kenya

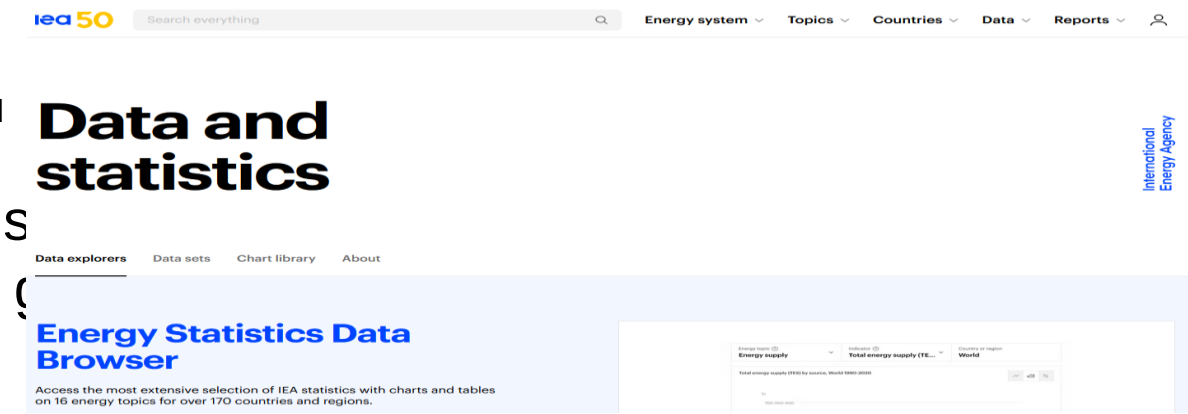
It is important to use different data collection methods to complement each other.
Ensure gender, youth and social inclusion in your data collection.

7. Data collection methods and their challenges – Secondary data

Example of Data collection tools

KOBO Toolbox - used for data collection, enable enumerators to collect data both online and offline without limitations on network connectivity, and they could easily use their mobile phones.





Challenges:

- Restricted documents or information – access, usage or sharing
- Some documents can be accessed at a cost
- Outdated documents or information
- Language barrier
- Incomplete information
- Unreliable information
- Non-existent e.g. gender data from the retail industry

It is important to verify secondary data and budget for documents that need to be purchased.

8. Best practice for regional data collection

1. Depending on the targeted number or group - budget to engage local enumerators
2. Engage local experts in the targeted country. If the involvement of an international consultant is required; prepare support/or introduction letters to the targeted stakeholders/institutions
3. Translate questionnaires / survey forms to budget is available
4. Involvement of national focal points or focal institutions
5. Conduct consultations with local stakeholders for validation

9. Conclusion and key take aways

Conclusion:

- Market assessment involves the processing of data into information for strategic planning/decision making.
- Guiding documents are key to ensure that the data collected is in line with your strategic interventions.
- The selection of your data collection methods depends on your objectives and the types of data needed.
- It is important to use different data collection methods to complement each other.
- Ensure gender, youth and social inclusion in your data collection.

Key take aways:

- It is crucial to verify data and budget for documents that need to be purchased.
- Consider using categorical data such as the variances between men and women in all aspects of the research to avoid failure in reaching your gender and youth targets.

Group Activity

Lunch Break

See you in 60 minutes!

International Energy Agency

Making it Happen: Industry transformation and Incentives

Melanie Slade, International Energy Agency

Nairobi, 19 March 2024

Key learning outcomes

- Understand what are incentives and why they are important
- List the different types of incentives
- Understand how incentives work with other policies

Several local manufacturers of electric fans have said that the MEPS levels currently in force in several neighbouring economies would ban most of their current product lines and threaten their businesses if these MEPS were applied in your country.

Discussion question: What steps could you take to gain the support of local industry for the introduction of ambitious MEPS?

The ideal policy package for appliances, equipment and lighting

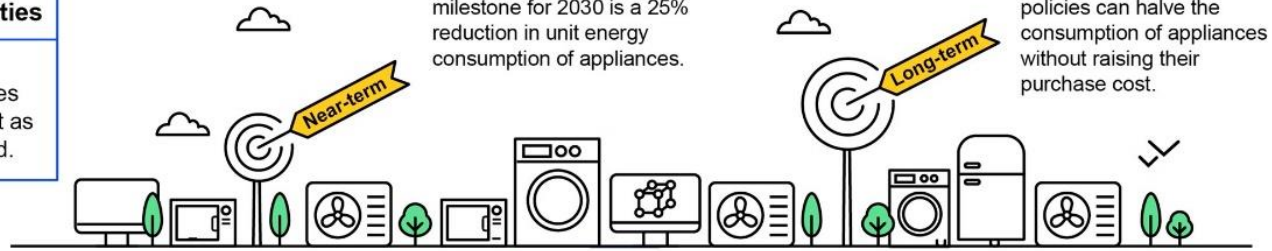
Appliance Energy Efficiency Policy Package

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.

Question

List examples of incentives that you can think of?

Incentives

- **Rebates** are often used to reduce the costs of efficient appliances for consumers – these drive the market for more efficiency appliances and can lead to economies of scale that in the longer term reduce the price of products.
- A common variant is **targeted rebates** for low income households - these have often been used for fridges because purchase costs are high as are running costs so an efficient fridge has a very long term benefits to a low-income household.
- **Government Procurement** of highly efficient appliances is often used to drive the market for more efficient appliances for example US ENERGYSTAR.
- Private sector companies may join similar procurement programmes to demonstrate their **Corporate Social Responsibility,** for example companies belonging to EP100.
- **Bulk procurement** works by guaranteeing markets for large numbers of products of a given specification, the most famous example being India's UJALA programme implemented by the Super ESCO Energy Efficiency Services Limited
- **Product lists,** for example those used by EBRD for loans issued by partner banks or by governments to provide tax reductions
- **Technology Procurement** works by publishing a specification for a highly efficient product that is not yet on the market and requires manufacturers to design, build and test products to meet the specification for some sort of award be that financial or a market guarantee the L Prize and the Global Cooling Prize are two influential examples

Incentivising industry

- Support for new products designs, e.g. technical assistance and provision of Intellectual Property.
- Facilitate access to finance for re-tooling, e.g. low interest loans or access to industry development/restructuring funds. This can bring forward investment in new more efficient production facilities for more efficient products.
- Assist the manufacturers in reducing their operating costs by improving their own operational energy efficiency.
- Introduce a consumer-friendly endorsement label for highly efficient (HEPS) products.
- Mandate public procurement of HEPS by government departments.
- Provide rebates to HEPS products to kick start the market and bring initial prices down.
- Support sales efforts to encourage exports to neighbouring markets to benefit from economies of scale.

Several local manufacturers of electric fans have said that the MEPS levels currently in force in several neighbouring economies would ban most of their current product lines and threaten their businesses if these MEPS were applied in your country.

Discussion question: What steps could you take to gain the support of local industry for the introduction of ambitious MEPS?

Question

List some of the reasons why a manufacturer might not want to switch to producing more efficient products!

What are the key issues?

- Is the claim correct or reasonable?
  - Assess product range against potential MEPS levels
  - What is required to make local products more efficient e.g.
    - Import different components
    - Re-tooling
- What are the barriers?
  - Capital for investment
  - Time required to change contractual arrangements
  - Insufficient confidence that the MEPS will be enforced
  - Perceived reduction in manufacturer’s profitability
  - Inertia, lack of will
- What can governments do to help the transition?
  - Design and implement consumer campaigns to give people confidence in efficient and new technologies
  - Lead by example and only buy highly efficient products themselves
  - Ringfence industry development funds and other incentive schemes for energy efficiency

What have countries done: China

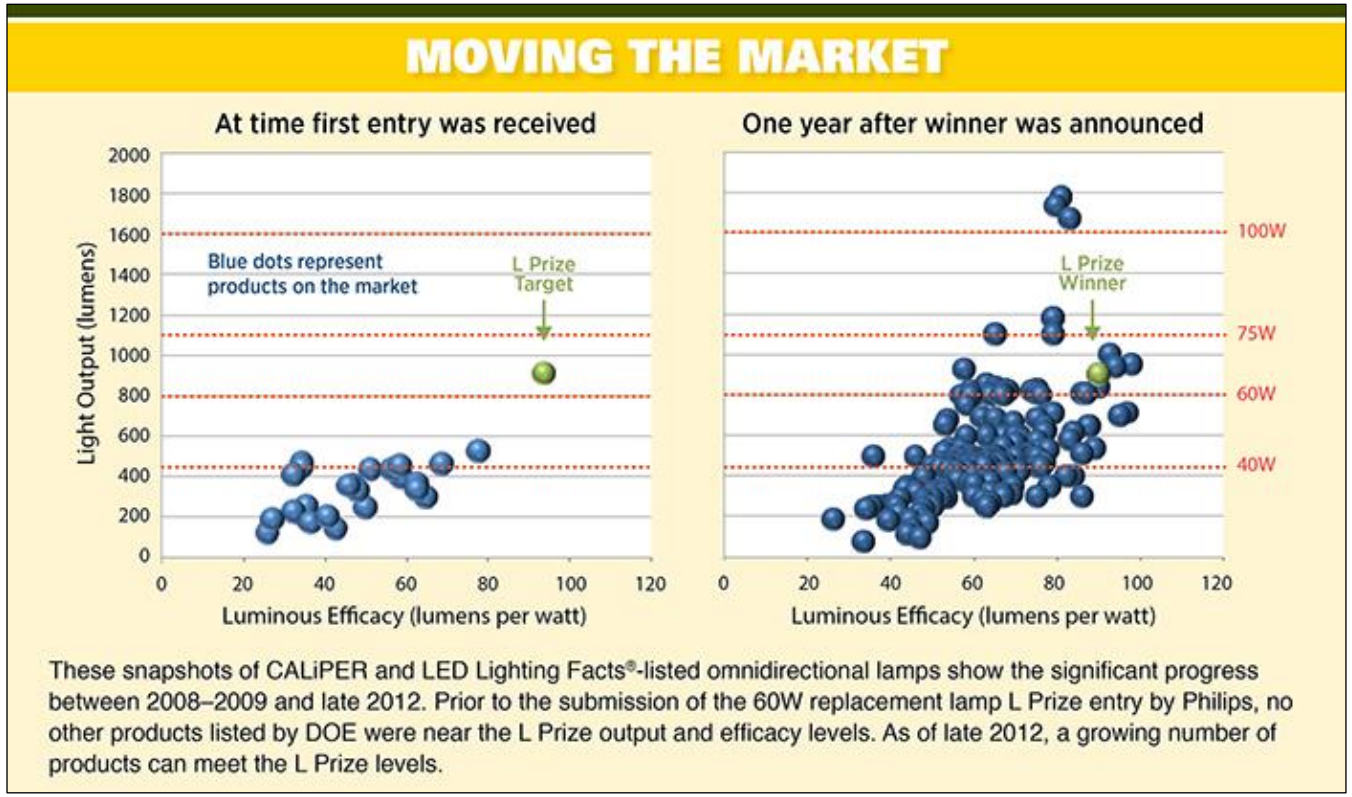
- Standards and Labelling Programme
- High Efficiency Performance (HEPS) Specification
- Manufacturers compete to place qualified products on a list
  - Rebate for consumers based on those listed products
  - Government procurement
- Why?
  - Increase the number/range of efficient products
  - Increase number of manufacturers able to produce more efficient products
  - Increasing the production volume leading to cost reductions
  - Increase domestic sales of efficient products by reducing their cost

What have countries done: US L Prize

- Published an LED Specification
- Rigorous testing requirements
- 1 million dollar award
- Why?
  - *To maintain the US as a base for manufacturing high tech products*
  - *To keep the US role in new technology (clean energy) development*
  - *To keep jobs in the high tech industry*
- Effect on the market?

US L Prize: Effect on the Market

The Effect of US L Prize on the Market (source: U.S. DOE)



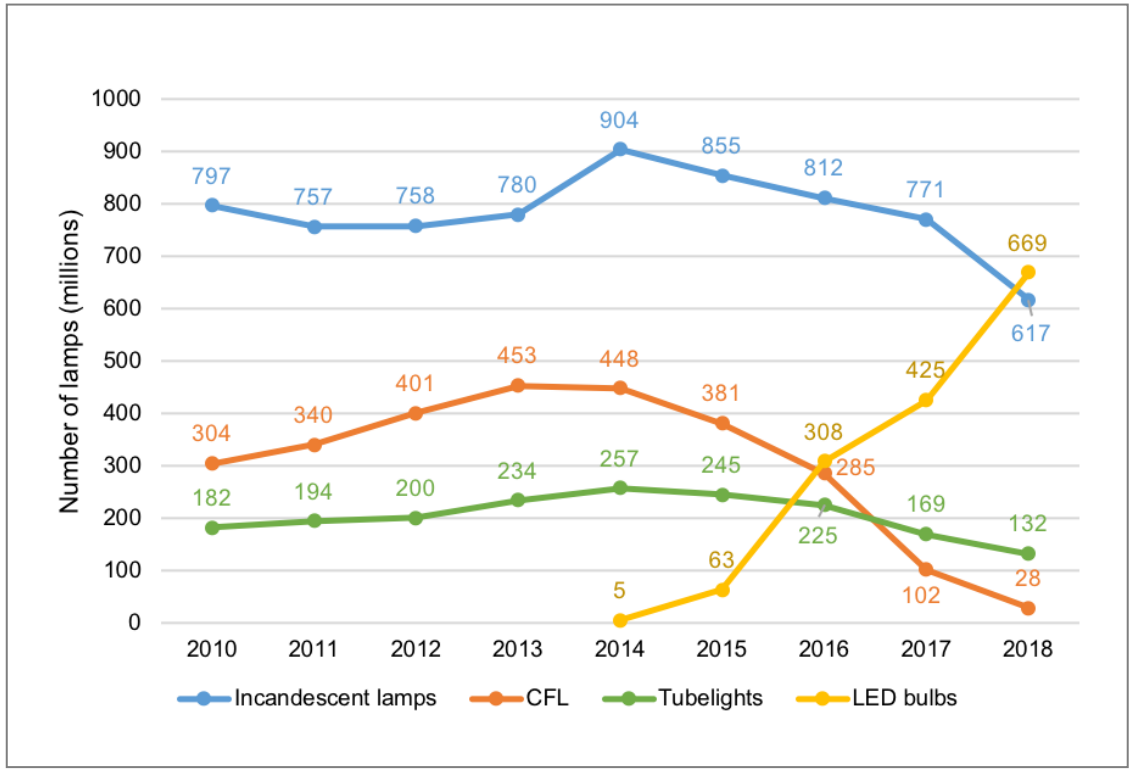
US L Prize entry helped catalyze market competition and pushed the whole industry toward a clear target.

What have countries done: Energy Efficiency Services Limited - India

- Super ESCO rolling out efficient products at scale (e.g. 270m LEDS; 1.3m Fans)
- The massive scale reduced purchase price significantly with products being made available at less than the cost of a conventional light bulb therefore needing no subsidies
- Consumers could choose to pay through monthly power bills or buy up front
- Why?
  - *Stimulates high quality Indian LED lamp manufacturing industry*
  - *Enables utilities to meet growing electricity demand (especially peak demand)*
  - *Households can use the saving of 15% off power bills to improve their quality of life leading to economic growth and prosperity*

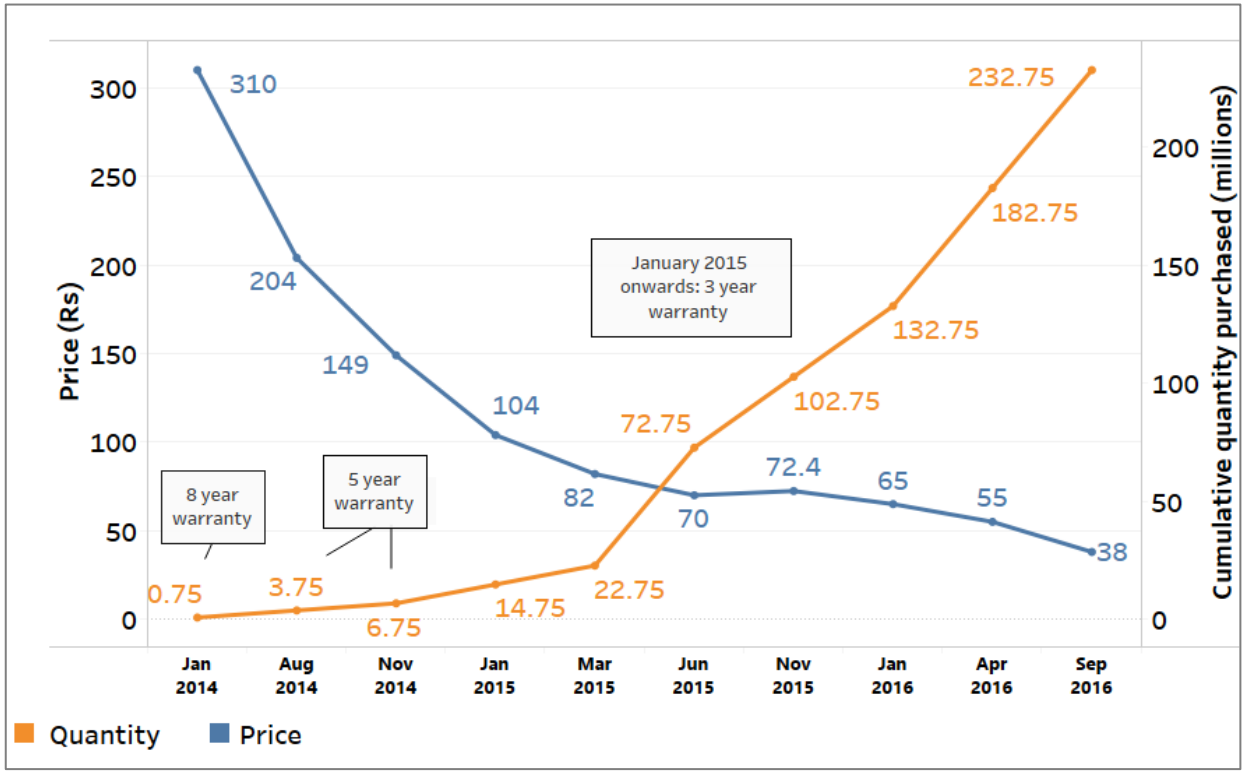
What have countries done: India “UJALA”

Quantity of sales of lamps with different technologies in India



LED Lighting market has sky-rocketed

Price evolution in respect to the LED quantity



Demand aggregation, transparency, and a speedy bidding process

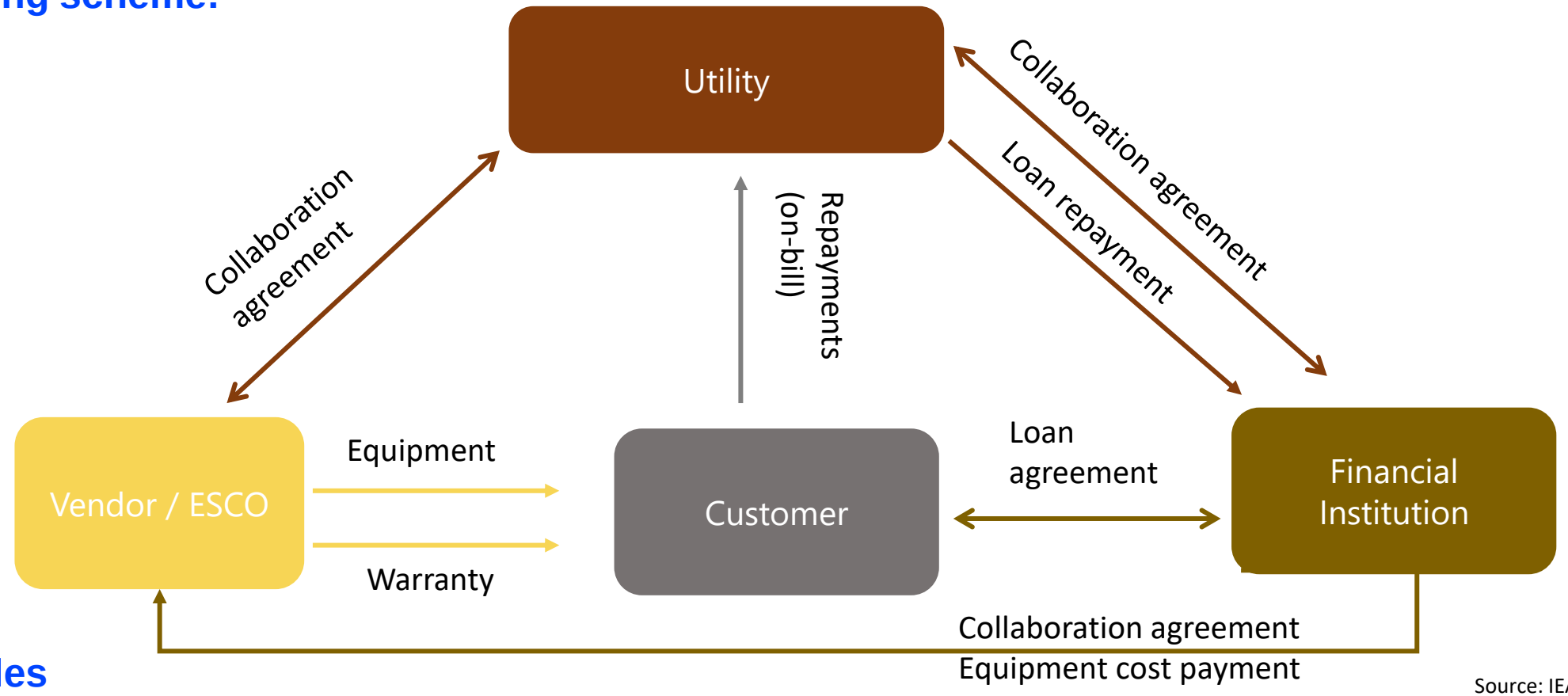
Pakistan: high efficiency fans

- Government procurement (offices and schools) have stimulated a new market segment.

- Nine manufacturers in Punjab now producing efficient fans.

Utility on-bill financing and on-wage financing

Financing scheme:



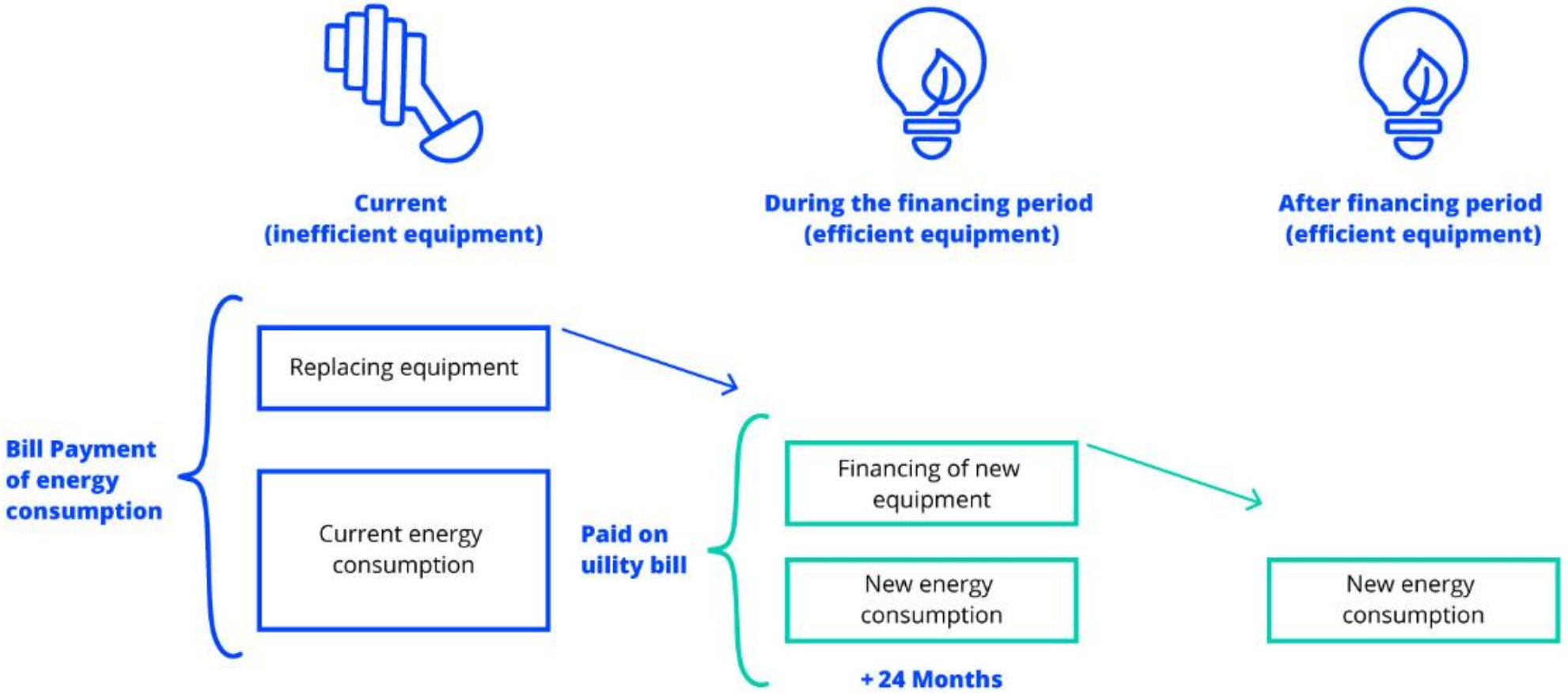
Source: IEA based on BASE Foundation 2023

Examples

- ECOFRIDGES Senegal: On-bill financing for ACs and refrigerators for pre-paid utility customers
- ECOFRIDGES-GO Ghana: Green on-wage financing programme with repayment through wage deductions
- SANEDI South Africa: Efficient appliances programme through OBF

Ghana: Financing approaches to domestic cooling: On Wage Finance

Principle of bill neutrality and savings



Take-aways

- Local jobs and manufacturing capacity are very important to governments
- Getting local suppliers on-side is vital!
- Transitioning to production of more efficient products can provide significant opportunities:
  - For Companies:
    - Opening up export markets
    - Increased profitability
  - For Government:
    - Employment potential in future technologies
    - Improved energy supply reliability
    - Lower energy bills – increased disposable household expenditure
    - Better comfort levels – improved productivity and lower medical costs
  - For Utilities:
    - Lower cost supply of energy services to consumers & businesses

A packaged approach from government

- The details need to depend upon the barriers, which may be multiple
- Other ideas include:
  - Support for new products designs, e.g. technical assistance
  - Facilitate access to finance for re-tooling, e.g. low interest loans through banks, etc
  - Introduce a consumer-friendly endorsement label for high energy performance (HEPS) products
  - Mandate public procurement of HEPS products by government departments
  - Provide rebates to HEPS products to kick start the market and bring initial prices down
  - Support sales efforts to encourage exports to neighbouring markets
  - Assist the manufacturers in reducing their operating costs by improving their own operational energy efficiency

How to cover the costs?

- Use industry restructuring funds
- Value the deferred investment in power generation
- Value the reduction in peak load
- Value the reduced energy imports or exports
- Value increase in GDP through growth in manufacturing
- Value the jobs created
- Use funds saved through phasing out fossil fuel subsidies
- Undertake a holistic cost benefit analysis

Multiple Benefits of Appliance Energy Efficiency

Energy Security

Reducing overall demand, efficiency can reduce reliance on fossil fuel

Energy bill savings

Cheaper efficient products for all

Job Creation

Growth in economy through growth in manufacturing jobs

Emission Reduction

Green house gas emissions reductions

Health and well-being

Reduced air pollution from reduced fossil fuel power generation

Collaboration between ministries is essential

- Energy
- Industry
- Environment
- Others?

Summary – What are the steps

- Assess how disadvantaged local manufacturers might be
- Identify the key barriers to transition
- Identify the time needed to transition
  - Agree MEPS but vary when it comes into force to allow for transition
- Identify all the potential benefits
- Put together a whole of government response to tackle barriers
  - Other ministries might include: Energy, Industry, Environment, Health, Others?
- Involve other stakeholders
  - Utilities, ESCOs, etc

Resources

- IEA, “Net Zero by 2050: A Roadmap for the Global Energy Sector,” Int. Energy Agency, p. 224, 2021.
- IEA/4E TCP, “Achievements of Energy Efficiency Appliance and Equipment Standards and Labelling Programmes,” Paris, 2021.
- IEA, “Energy Efficiency 2021,” Paris, 2021.
- https://www.iea.org/reports/the-value-of-urgent-action-on-energy-efficiency/policy-toolkit
- https://www.energy.gov/eere/ssl/l-prize-competition
- https://eeslindia.org/en/dashboard/
- https://www.ecofridgesgo.com/

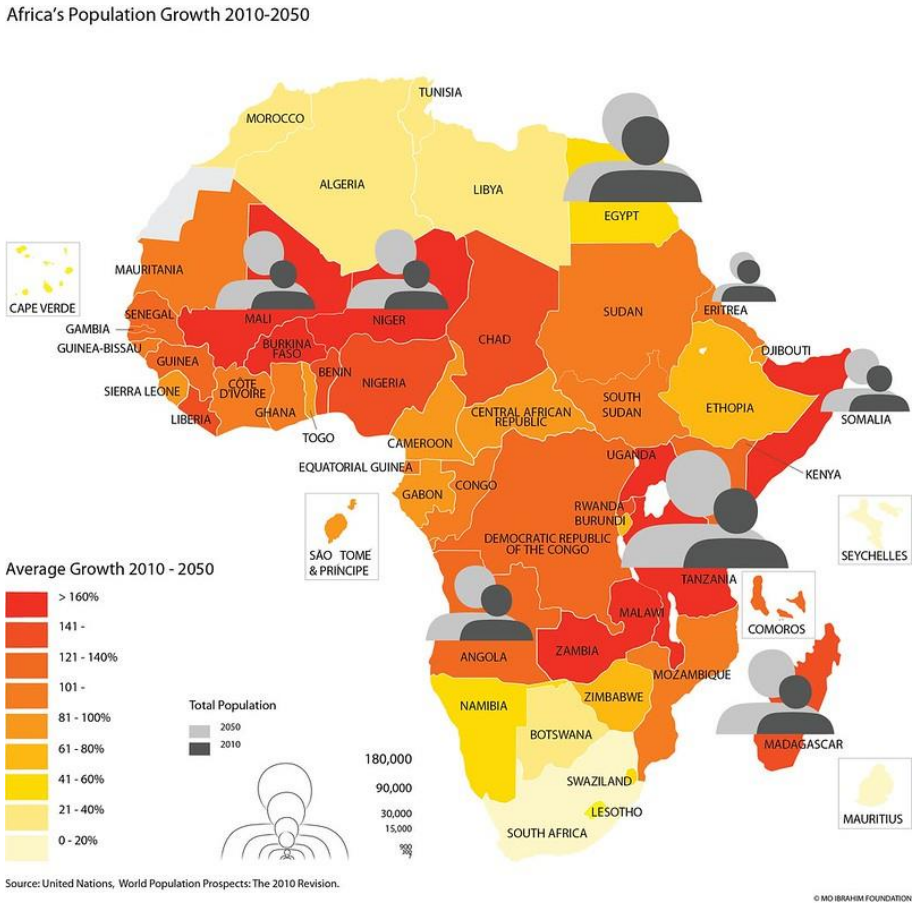
International Energy Agency

Making it Happen: industry transformation and incentives

Luc Tossou. African Development Bank (AfDB)

Background

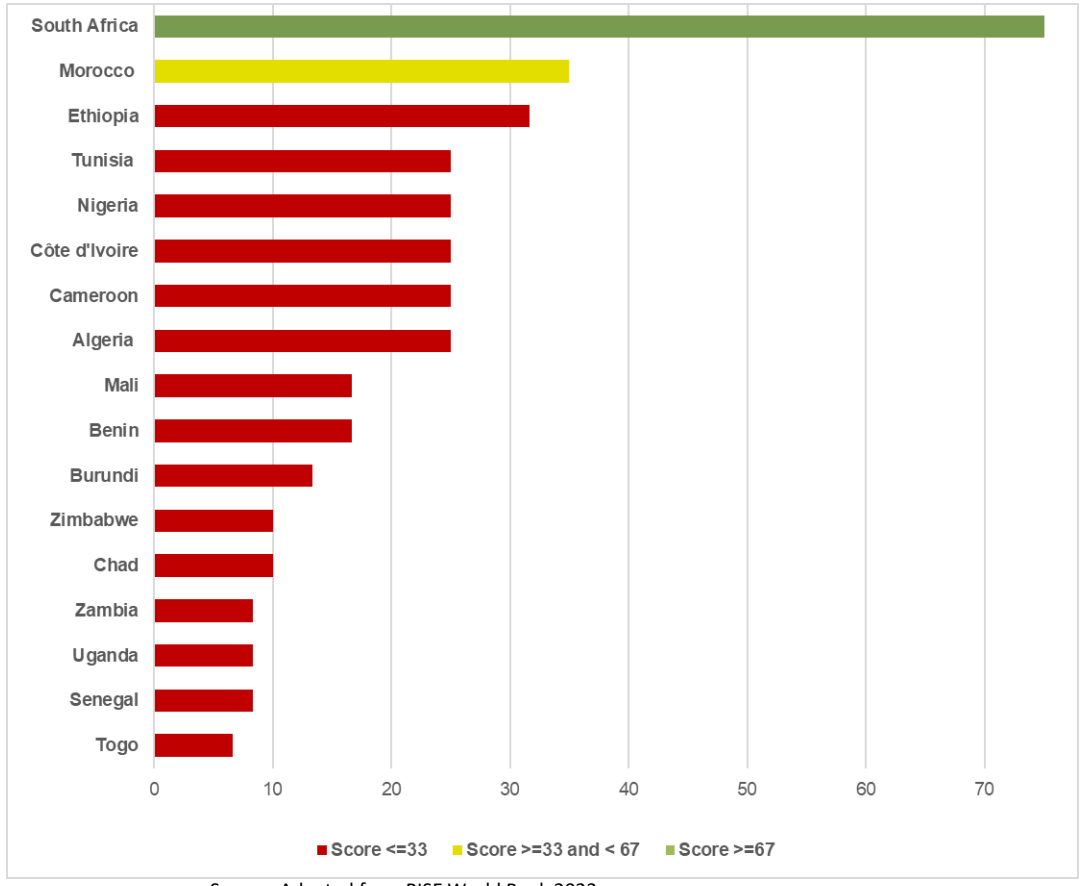
- The share of the population with access to electricity in sub-Saharan Africa (SSA) is projected to reach 65% in 2030 with over 230 million people gaining access, under current policy efforts
- Several African countries have set a target to achieve universal access to electricity by 2030 through a combination of on-grid and off-grid supply
- By 2040, the urban population in Sub-Saharan Africa (excluding South Africa) will more than double to over 900 million, and average incomes in urban households will increase by close to 40%, driving up appliance ownership rates



Source: https://www.flickr.com/photos/moibrahimfoundation/6334485690

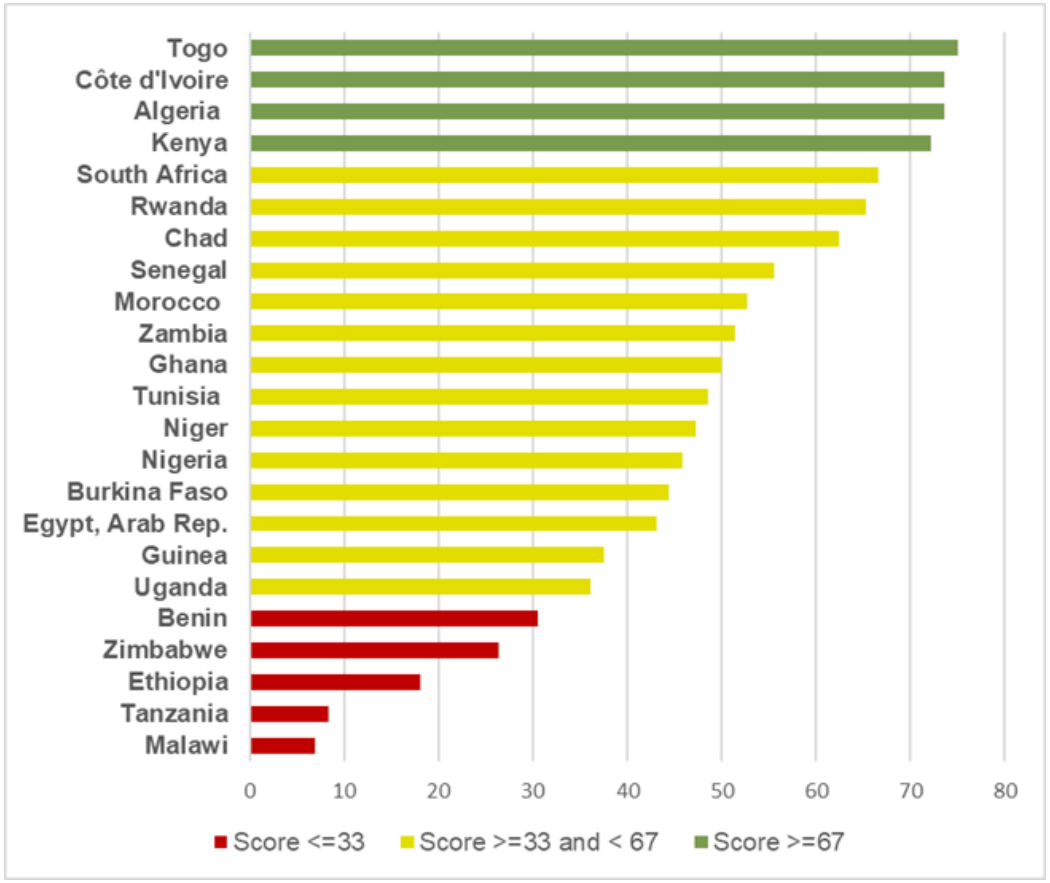
EE Situation- Regulatory Indicators for Sustainable Energy (RISE)

RISE Score for Financing mechanisms for EE



Source: Adapted from RISE World Bank 2022

RISE Score for Adoption and Implementation of MEPS



Source: Adapted from RISE World Bank 2022

A total of 39 African countries covered by the RISE 2022 Report. The indicator on financing mechanism for EE scored in the red zone in 37 out of 39 countries in the sub-Saharan Africa, while the adoption and implementation of MEPS scored in the red zone in 21 out of 39 countries

Main barriers to Uptake of Energy Efficient Appliances and Equipment

- **Electricity End Users**
  - High upfront-cost of new EE and climate-friendly technologies
  - Limited knowledge and lack of trust in EE
  - Limited credit capacity or access to finance for the majority of households
- **Technology providers**
  - Unfair competition with companies selling second-hand or sub-quality appliances and equipment
  - Hard to sell a promise of future benefits (energy savings) to end users
  - Lack of innovative financial mechanisms and low-risk credit recovery mechanisms for end users
- **Financial institutions (FIs)**
  - Low financial inclusion – cash is the prominent payment method for many consumers
  - High-risk perception on credit defaults and thus high collateral requirements for consumer seeking unsecured loans (consumer loans)
  - Limited visibility of green investment opportunities

Innovative Financing Schemes

Models for addressing the barriers of high up front costs and access to capital

Source: https://powertechreview.com/why-energy-efficient-motors/

Source: https://www.lightbulbs.com/blog/energy-saving-lighting-tips

Source: https://international.lbl.gov/appliance-efficiency

Bulk procurement

Aggregate demand for EE technologies, leading to rapid reduction in prices (Example: India Energy Efficiency Services Limited (EESL) bulk procurement programs)

On Bill Financing

Provision of capital which is repaid via electricity bills (Example: Prosol program in Tunisia)

Green On-Wage Financing

Consumer finance product for sustainable energy products through salary deductions (Example: Ecofridge in Rwanda and Ghana)

EESL Bulk Procurement Models

Affordable LEDs for All (UJALA): LED bulk-procurement model of EESL has been instrumental to successfully drive the market towards energy-efficient lighting

- **Challenge**: Lighting represented a large share of total household electricity demand (roughly 26% of India's residential electricity consumption).
  - In 2011, CFLs made up 45% of the market, while tube lights and incandescent bulbs made up 40% and 14% of the market, respectively
  - Energy-efficient LEDs made up a mere 0.3% of the market
- **Solution**: Using a demand aggregation model to lower upfront costs, LED bulbs are distributed to households
  - In January 2015, EESL invited manufacturers to bid for a large-scale LED lamp procurement, covering all initial expenses, at rates lower than that in the local market
  - EESL also engaged with state governments and DISCOM utilities to establish a distribution network (electricity distribution companies, non-governmental organizations, and government agencies)
  - Stringent quality control measures, along with comprehensive measuring, reporting, and verification procedures

Impacts of the UJALA Programme

- Energy Savings and Cost Reductions
  - As of March 2022, the program had saved over 47 billion kWh, and 9GW in peak demand reduction, avoiding 37 million tons of CO_2 emissions annually
  - Between 2014 and 2017, the program decreased LED bulb retail costs between 76-80%, from INR 300-350 per bulb in 2014 to INR 70-80 per bulb in 2017
- Quality Assurance and Consumer Protection
  - High-quality LED bulbs with a ≤0.3% failure rate and a mandatory three-year warranty
- National Influence
  - EESL created in 2019 the Super-Efficient Air Conditioning Program (ESEAP)

Source: UJALA Report, 2017

EESL Super-Efficient Air Conditioning Program (ESEAP)

- EESL announced in 2017 the procurement of super-efficient 1.5 TR ISEER 5.2 (minimum) inverter room ACs, primarily for residential and institutional use

EESL Tender for super-efficient ACs

- 1000,000, 1.5 TR, 5.2 ISEER and above, super-efficient ACs

Tender Specifications

- 1.5 TR
- Window or split
- ISEER 5.2 or greater
- 1 (+2) year warranty
- Addtional component warranty - 5 years warranty on condenser/evaporator coil and 10 years warranty on compressor
- Design, manufacture, supply, Installation and after-sales services
- No mention of Low-GWP refrigerant requirement

Successful bidders

- Panasonic - L1 @ INR 35000
- Daikin - INR 41000
- Godrej - INR 51000

Contract awarded

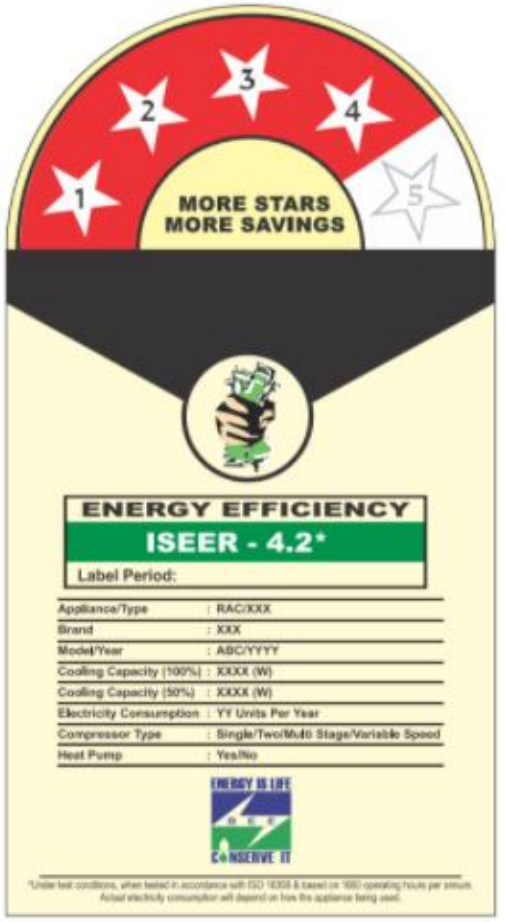
- Panasonic - 60,000 ACs, ISEER 5.2,
- Godrej - 40,000 ACs, ISEER 5.2, HC-290 refrigerant

Source: TERI, 2019

(From 1st January, 2018 to 31st December, 2019)

Indian Seasonal Energy Efficiency Ratio (kWh/kWh)		
Star level	Minimum	Maximum
1 Star	3.1	3.29
2 Star	3.3	3.49
3 Star	3.5	3.99
4 Star	4.0	4.49
5 Star	4.5	

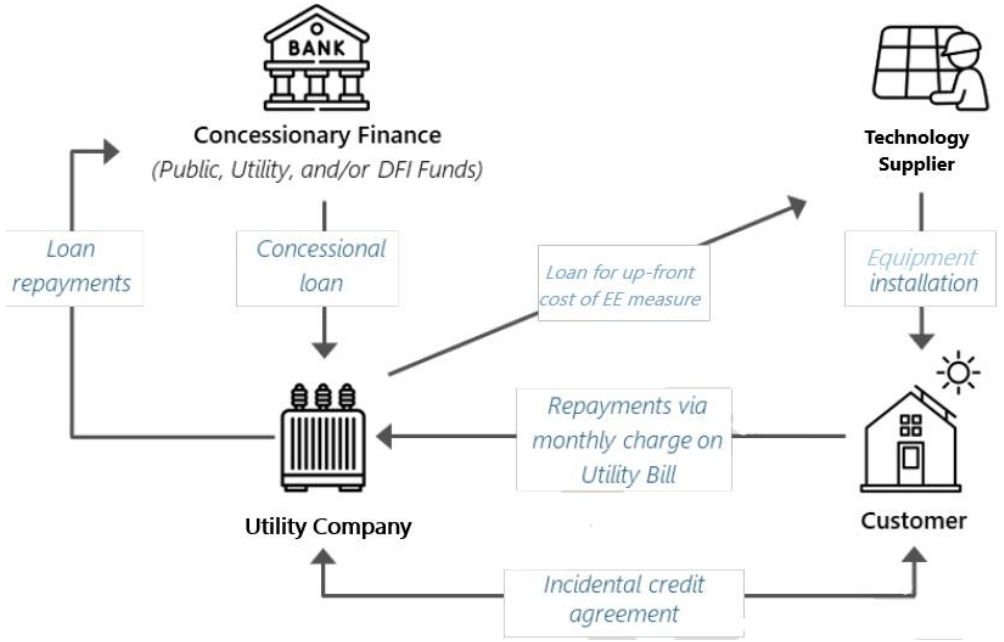
Source: Gazette of India, Ministry of Power Notification, S.O. 2528, 2017



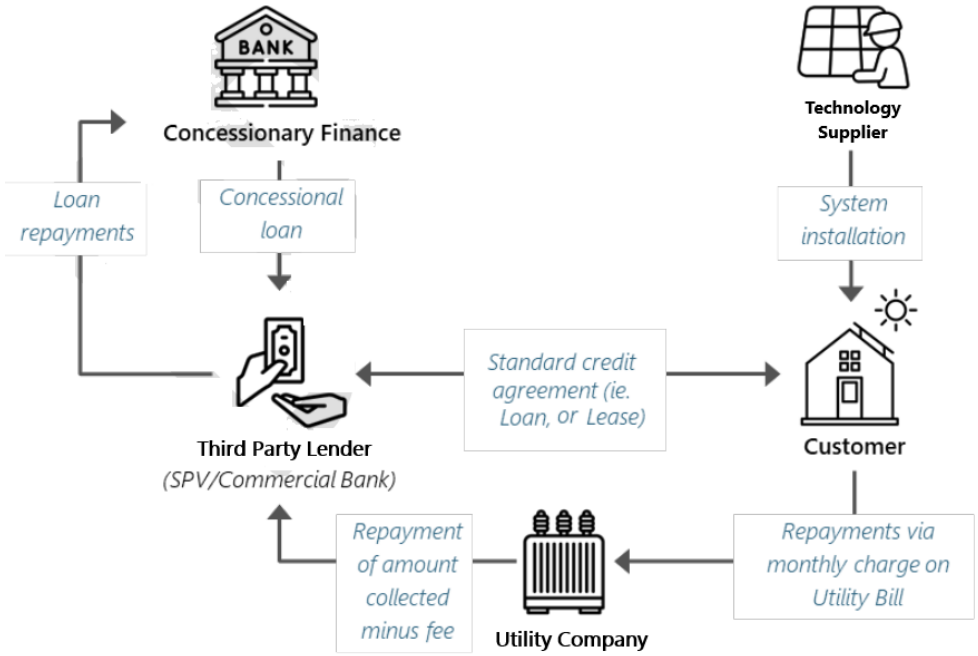
Source: https://cprc-clasp.ngo/sites/default/files/styles/widescreen_1920_x_1920/public/policies/label-images/India%20Comparative%20Label_7.PNG?itok=hXAQWRFs

On Bill Financing (OBF)

- Designed to remove financial barriers to energy-efficiency investments for utility customers who are deterred by the upfront costs and/ or do not have to access to affordable finance



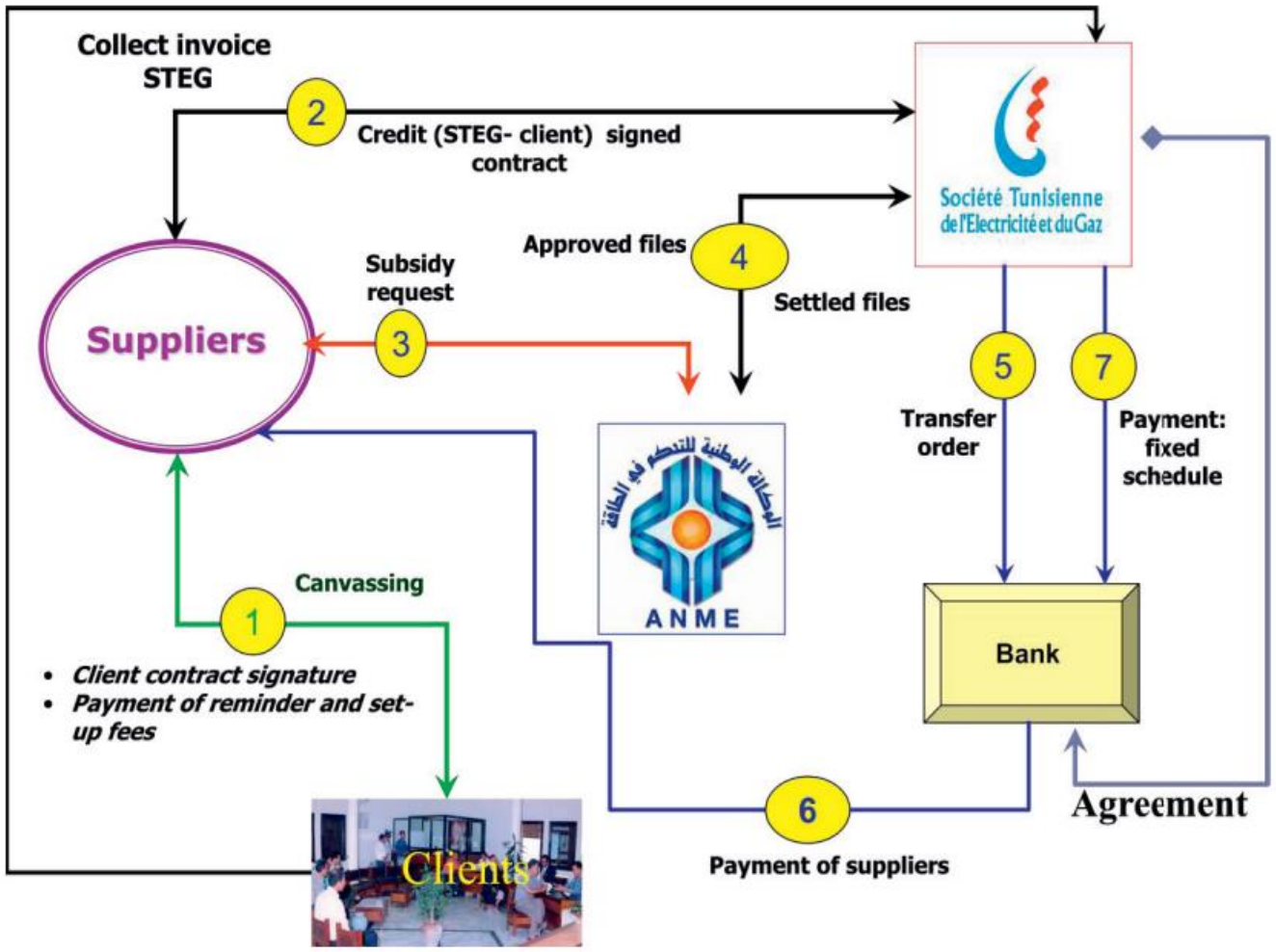
Typical Structure of an OBF



Structure of an On Bill Repayment

OBF for Domestic Solar Water Heating (SWH) in Tunisia

- **Goals**: (i) Develop sustainable SWH market and displace LPG use; (ii) Overcome market barriers and increase investment flows to renewable energy and energy efficiency technologies; (iii) improve energy security and reduce CO2
- **Barrier addressed** : Lack of affordable credit to end users
- **Instruments used**: Government grants and credit by local banks
- **Results (2005 – 2010)**
  - more than 3500 direct jobs created
  - Average of 10 000 sqm of SWH systems installed annually before 2005
  - Average of 90 000 sqm in 2010
  - 95 000 SWH systems installed with a total of 285 000 sqm
  - Number of companies selling SWH: 8 in 2004 to 40 in 2009
  - Number of qualified installers: 100 in 2004 to 1000 in 2009



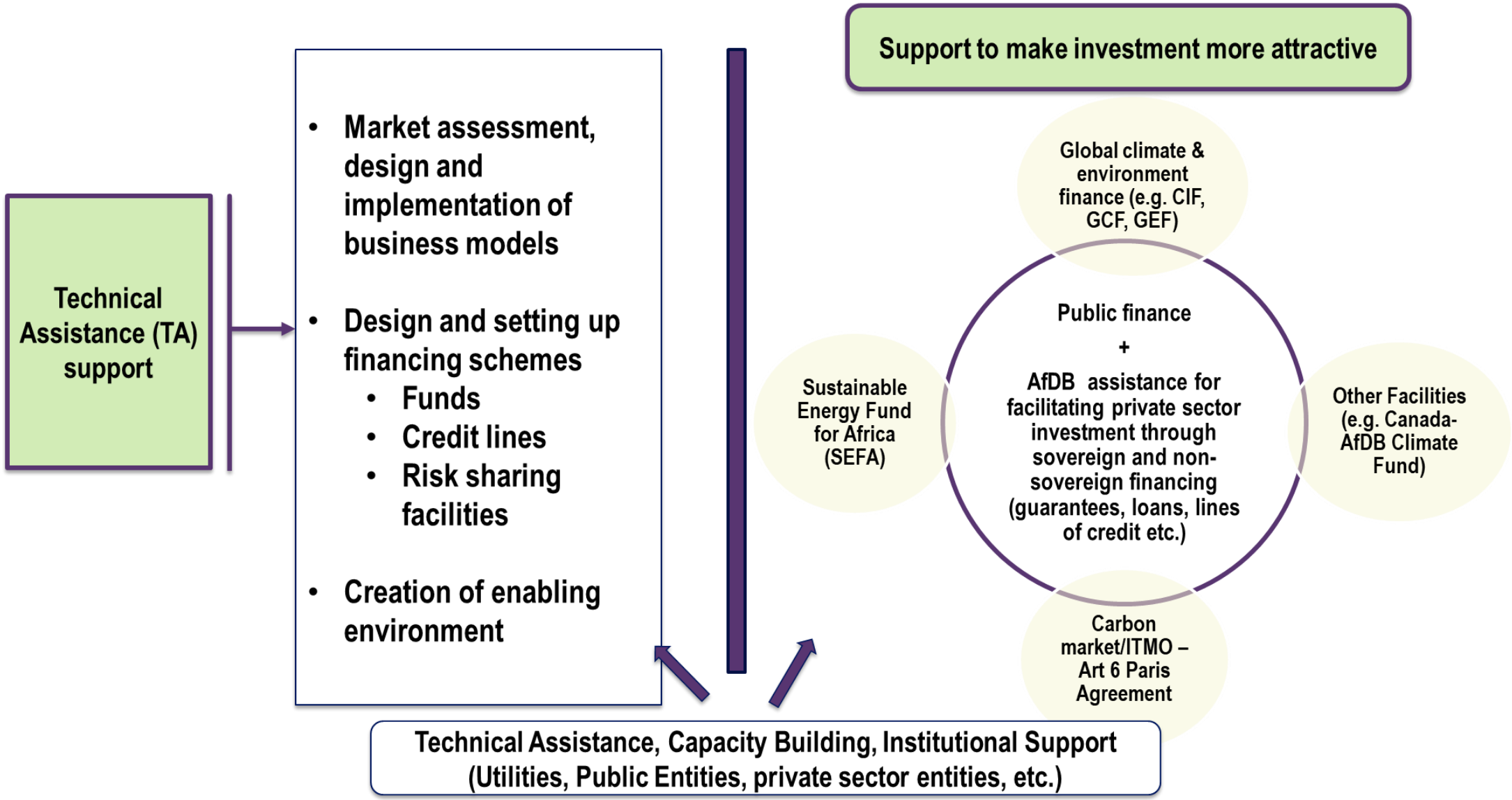
Green On Wage Financing

- **Target**: Salaried employees of public and private institutions that are profiled or have a business relationship with local financial institutions (LFIs)
- **Offer**: Short and medium terms unsecured consumer loans with 0 per cent interest rate, usually with tenor periods between 3 to 18 months, to qualified salaried employees
- Currently being implemented in Ghana and Rwanda with the Ecofridge Program

Actors and their role

(Source: BASE, 2020, Green On-Wage Financing)

AfDB Support in Transforming Appliance Markets



AfDB TA Support: EE Market development Program (Phase II)

- Objectives: **increase investment in EE and CC in the public and private sectors** by enhancing the enabling conditions for developing sustainable EE and CC markets and facilitating the development and implementation of bankable investment projects/programmes

Component 1: Investment Program/Project Design and Preparation Helpdesk

- Develop of action plans and support the design and preparation of EE and CC investment opportunities
- Establish pipelines of EE and CC opportunities and facilitate investments in highly energy-efficient technologies (e.g., lighting, heating and cooling appliances, electric motors, etc.)
- Support new and innovative business models (e.g., on-bill-financing, energy performance contracting, cooling as a service, etc.)
- Design of EE financing facilities (lines of credit and/or guarantees)
- Prepare EE and CC investment projects (e.g., technical, environmental, legal support, financial advisory services, gender mainstreaming technical advisory services) for both public and private entities

Component 2: Ecosystem and Enabling Environment Strengthening

- Knowledge sharing, and design of policy and regulatory tools
- Development of minimum energy performance standards and energy efficiency labelling schemes

Coffee Break

See you in 30 minutes!

[Panel Discussion]

Stakeholder Involvement and Communication

Group Exercise

Scenario

- In 2016, the government of your country signed the Paris Agreement, and in 2018, ratified the Kigali Amendment to the Montreal Protocol on phasing down HFCs worldwide. The President has decided to develop a new agency.

- You and your group are the newly employed staff members of the **Department of Energy Efficiency** (DEE).

- Energy efficiency rewards action. Countries that really pushed on energy efficiency over the last few decades now see lower consumer costs, lower fuel imports, and lower emissions.

- 2023 has been already been a year of momentous changes in global energy policy. The impacts of the ongoing pandemic, energy security issues, and the worsening climate emergency mean now, more than ever, we need to come together as a global community to ensure a reliable, resilient, and secure, global energy system. The president is looking to see your plan for the country, include quick wins and long-term actions.

- The president is also receiving some negative feedback about his decisions, some opponents are questioning how it will benefit the country.

Instructions

1. You will be assigned to a group that will represent the Department of Energy Efficiency (DEE) in “your country”. **Please make up a name for your country**.
2. As a group, you will need to develop components of an energy efficiency plan.
3. You will be provided with a list of specific questions that you should consider when developing your energy efficiency plan.
4. You will be given some time each day to work on these plans and apply the knowledge you have learnt throughout the course.
5. Each group will be required to present their plan (e.g. PowerPoint) back to the President and Committee on the last day of the course (Thursday).
6. Presentations should be no more than 10 minutes in length. Be creative!
7. Followed by 3 minutes Q&A from the President and the committee!

Instructions

Information: Labels and consumer information campaigns.

- Information policy instruments help reinforce the public understanding of more efficient products and help with comparing between products.
- For the product(s) you decided to regulate, please design an energy label. Reflect on what elements should the energy label include and how should they be displayed.
- What kind of activities/campaign can you think to increase awareness in your energy efficiency labelling programme? How can you ensure they are effective?
- How would it benefit your country?

Incentives and industry transformation.

- Incentives in the forms of rebates, grants, and other financial offers, encourage consumers and manufacturers by making investment in and development of efficient appliances more attractive. Incentives also drive innovation and the adoption of new technology and practices.
- On this basis:
- How could you get industry on board with the energy efficiency programme?
- What types of incentives could you introduce?
- How do we decide if our programme is working?

Group Organisation

- Everyone should participate in the group work
- Chose 1-2 speakers to present the proposal
- Allocate some group members to develop the presentation