# Industry Workshop: Minimum Energy Performance Standards (MEPS) for Electric Monitors

28th October 2022

clasp

# Our Mission

CLASP improves the energy and environmental performance of the appliances & equipment we use every day, accelerating our transition to a more sustainable world.

clasp


# Where We Work

# What we do

**Energy & Quality Standards** to keep inefficient, low-quality products off the market.

**Policy Compliance, Product Testing & Quality Assurance** to ensure products perform & markets are fair to all.

**Product Labeling & Consumer Education** to attract consumers to good products & inspire demand.

**Awards & Product Recognition** to reward early-movers & accelerate markets.

**Procurement, Incentives & Bulk Buys** to incentivize innovative manufacturers, reduce risks for all & saturate markets with efficient, high-quality products.

**Global Collaboration & Knowledge Sharing** to leverage cutting-edge & collective knowledge and forge productive partnerships.

# Some of Our Key Project in South Africa

Development of the Electric motor Regulation (2021-2022): NRCS is developing a regulation

Development of general service lamp regulations (2018) : The regulation is developed but yet to be adopted.

Development of regulation on street lighting (2021-Present):This is under development.

Support to the South Africa government to introduce water efficiency policies that will mitigate the risk of water shortages throughout the country by identifying more efficient technologies for taps and showerheads.

# Some of our other projects in the region

- Development of Harmonized EAC and SADC Lighting MEPS-Quality and Performance Standards.

The MEPS were developed under the Energy Efficient Lighting and Appliances (EELA) for (EACREEE) and (SACREEE) with CLASP as the technical implementer. The MEPS were reviewed and approved in both EAC and SADC countries. Some countries in EAC are already domesticating the MEPS.

- Development of the Regional (EAC and SADC) compliance frameworks and regional procurement guidelines
- Study on Environmental dumping of inefficient Air conditioners in Africa

## Country Specific

- Developing a national framework for leapfrogging to energy efficient residential refrigerators and distribution transformers for Botswana under the GCF funding (2021-2022).
- Market assessments for lighting in Mozambique, Tanzania and Zanzibar which might result in introduction of MEPS for lighting into the countries
- Support on Kenya's S&L program: cooling
- Development of the Kenya's cooling action plan
- Consumer awareness campaign for Kenya's S&L program

# Policy and Regulatory Overview

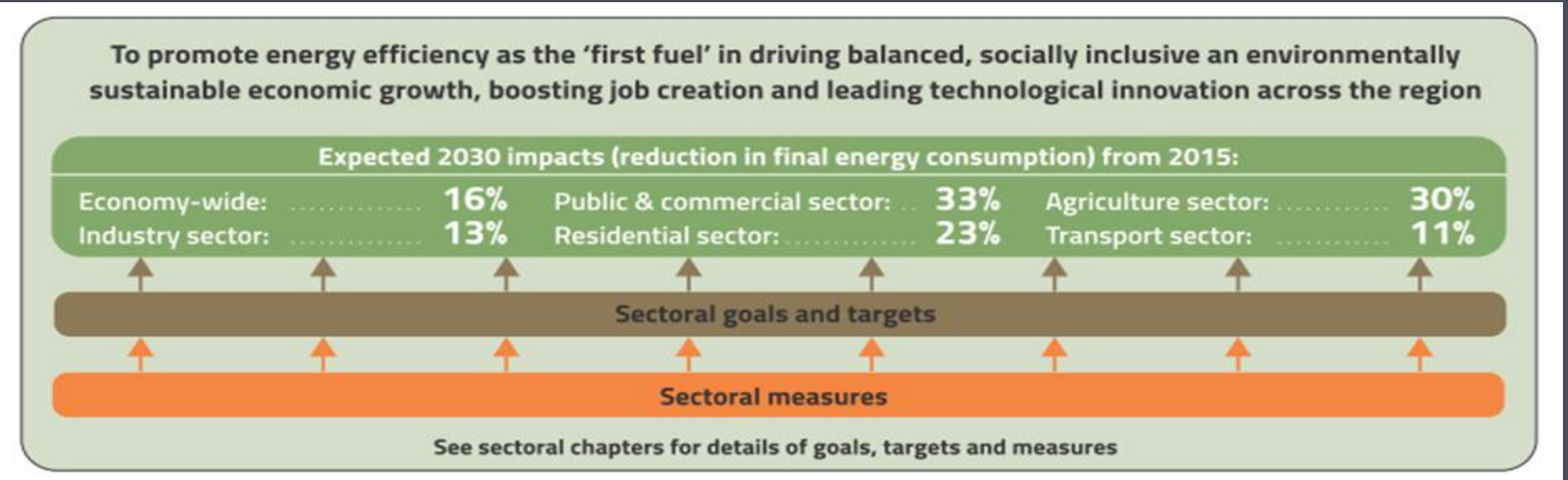
# Energy Efficiency – Policy & Regulatory Overview

S&L is priority activity of the post-2015 National Energy Efficiency Strategy which has set a final economy wide energy consumption reduction target of 16%.

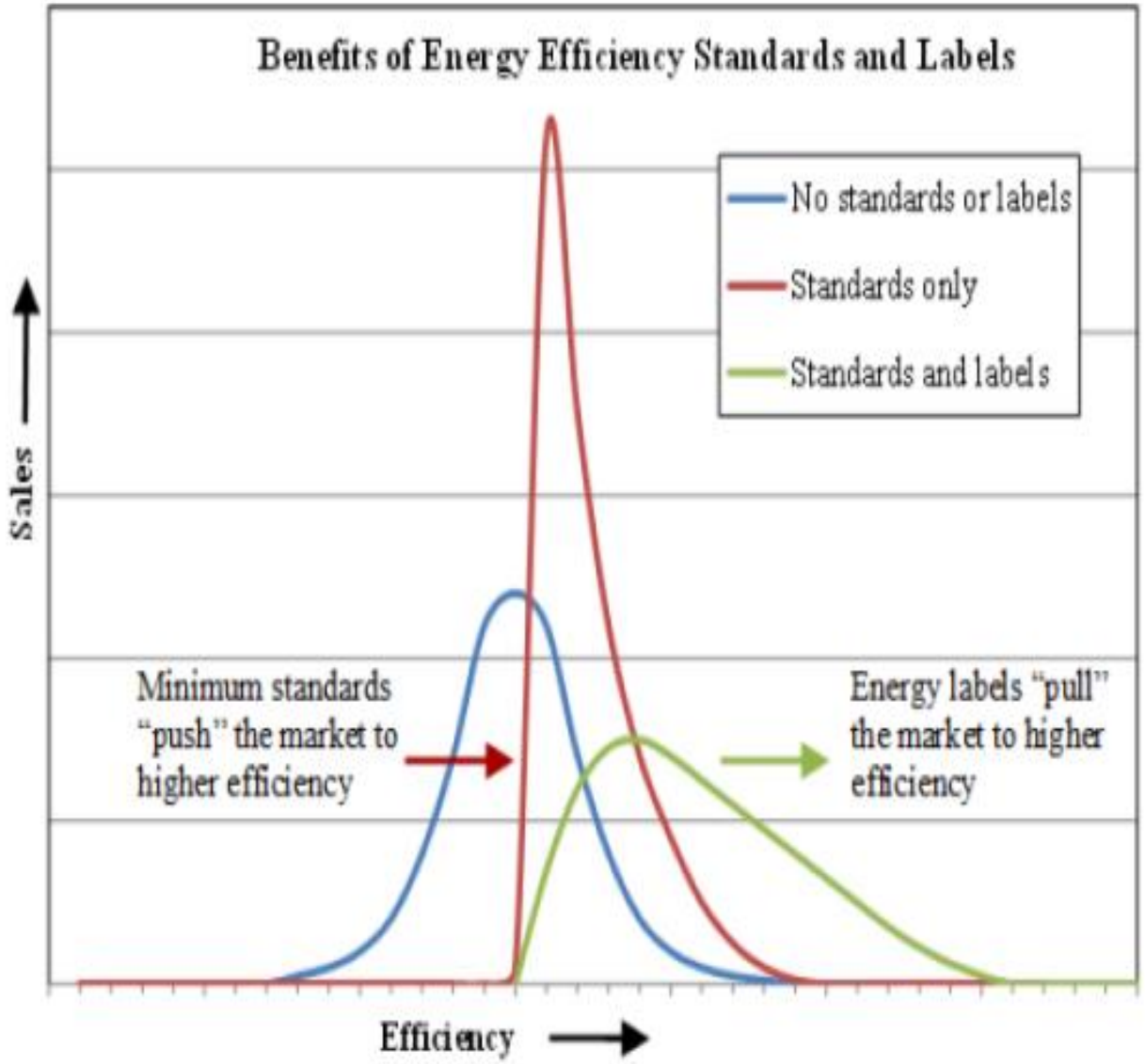
The post-2015 NEES feeds into South Africa's NDCs (National Determined Contributions) pledge, under the Paris Agreement.

SANEDI has been mandated by the DMRE to implement the national S&L Program.

Furthermore, these steps are a contribution



# Policy Tools to Accelerate Adoption of EE Equipment




**When is labelling most effective?**

– When appliance purchasers pay the energy bills
– When displayed products can be compared
– Where there is a wide range of EE on the market

Labelling creates **market pull** to encourage suppliers to offer more efficient products to the market

**When is MEPS most effective?**

– When product purchasers do not pay energy bills
– When products are not on display for sale (online etc)
– When there is limited range of efficiency available

MEPS is a market push to ensure that all products offered for sale meet a minimum efficiency level

# S&L as an International EE Policy Tools

- MEPS are a globally acknowledged policy tool to drive industry towards improved efficiency
- MEPS are used by 80 countries. The most regulated appliances are refrigerator with 80, then washing machines (50+), televisions (40+), and tumble dryers.
- South Africa is **not** one of the 40 countries which fully regulates television EE
- Research has confirmed the multiple benefits of S&L – consumers; industry; energy security, poverty, and affordability; environment
- MEPS and energy labels are attributed with reducing countries' **energy intensity** per unit of GDP. This is a result of reducing operating costs, energy consumption, and $CO_2$ emissions.

# MEPS introduced for appliances (VC 9008), geysers (VC 9006) & general service lamps VC 9109 pending)


Dishwashers

0.3 million p/a


Washer-Dryers

< 0.1 million p/a


Washing Machines

0.5 million p/a


Tumble Dryers

<0.1 million p/a


Electric Ovens

0.6 million p/a


Fridges and Freezers

FF 1.3 million p/a
F 0.3 million p/a


Water Heaters

0.5 million p/a


Air Conditioners

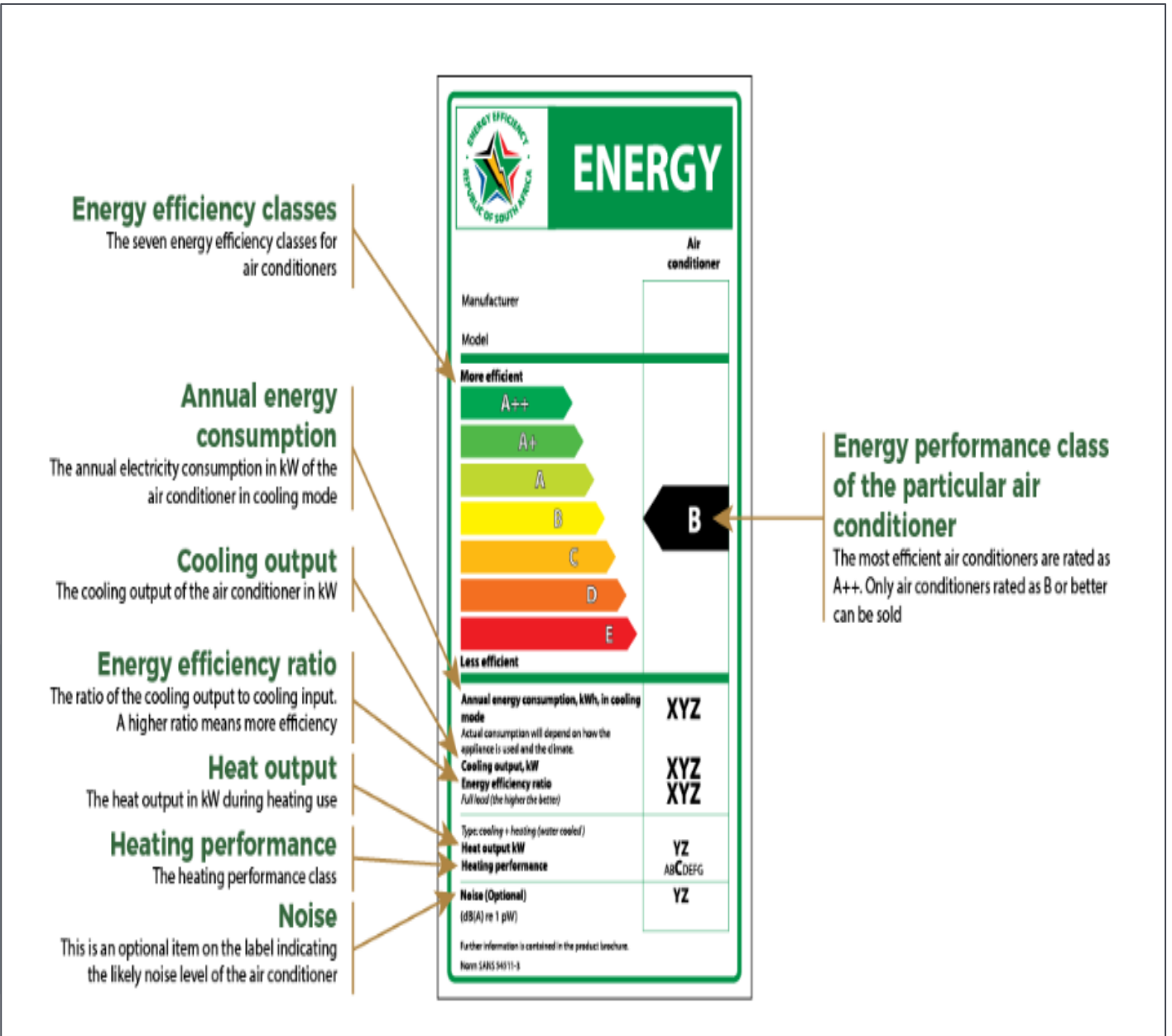
0.3 million p/a

Lights Bulbs


Audio-Visual Equipment

1.5 million p/a

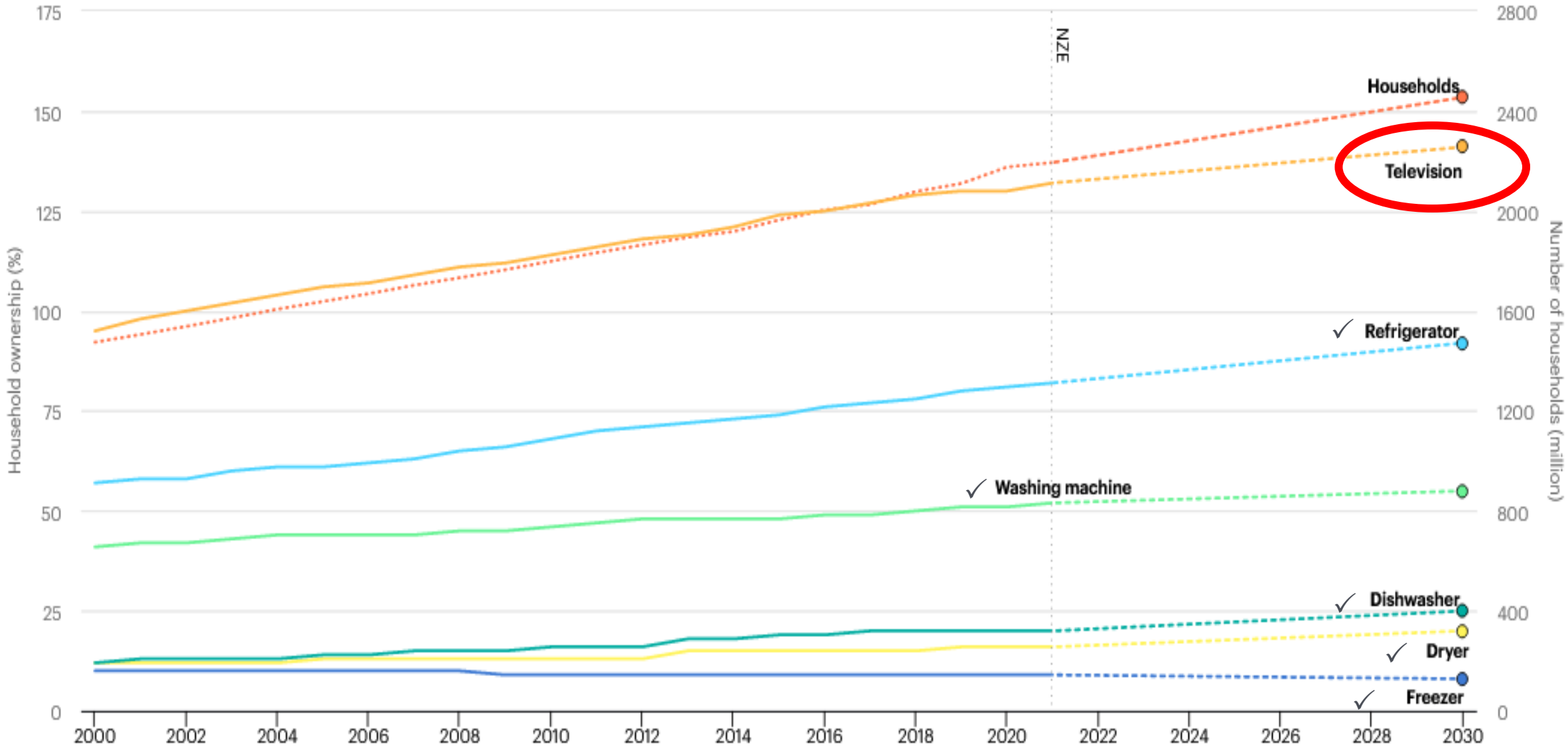
# 9 of the 11 regulated appliances must display the SA Energy Efficiency Label.





www:savingenergy.org.za/Guidelines/Guidelines/guidelines.html

Worldwide average household ownership of appliances and number of households in the Net Zero Scenario, 2000-2030



# Expanding the S&L Programme

- Electric motors, electronic displays and streetlighting have been selected
- A Cost-Benefit Analysis is an internationally accepted methodology for the economic evaluation of the potential impacts of new regulations (MEPS), and should consider
    - Energy Demand Reduction
    - Peak Load Reduction
    - Environmental Impacts
    - Consumer Impacts
    - Manufacturer and Employment Impacts
    - Trade Impacts
- .

# International Developments (MEPS and Labelling

# Which countries have MEPS and labels for TV? Overview

**According to CLASP's Policy Resource Center -**https://cprc-clasp.ngo/policies:

- 28 countries have already adopted regulations concerning the energy efficiency of electronic displays
- And additional 5 countries have regulations under development

| Adopted regulations | Televisions | Displays |
|---|---|---|
| MEPS | 18 | 7 |
| Comparative labels | 23 | 9 |
| Endorsement labels | 11 | 6 |

# EU regulation (1)

## Overview of the EU regulation (1)

### Scope

(1) '*electronic display*' means a display screen and associated electronics that, as its primary function, displays visual information from wired or wireless sources;

### Efficiency requirements

$$EEI = \frac{(P_{measured} + 1)}{(3 \times [90 \times tanh(0,02 + 0,004 \times (A - 11)) + 4] + 3) + corr}$$

$P_{measured}$ = measured power in on mode in the normal configuration; defined minimum peak white luminance
$A$ = screen area
$corr$ = temporary correction factor for OLED electronic displays

# EU regulation (2)

## Efficiency requirements

**EEI limits for on-mode**

| | $EEI_{max}$ for electronic displays with resolution up to HD | $EEI_{max}$ for electronic displays with resolution above HD and up to UHD | $EEI_{max}$ for electronic displays with resolution above UHD and for MicroLED displays |
|---|---|---|---|
| 1 March 2021 | 0,90 | 1,10 | n.a. |
| 1 March 2023 | 0,75 | 0,90 | 0,90 |

- ✓ Per category of resolution
- ✓ Allowance for ABC TVs

# EU regulation (3)

## Circumvention and software updates

- No products designed to be able to detect they are being tested
- The energy consumption of the product and any of the other declared parameters shall not deteriorate after a software or firmware update


## Review

- New technologies
- Digital signage displays
- Resource efficiency

# EU regulation (4)

## Additional requirements

- Standby modes
- Material efficiency requirements

## Measurement methods

- Rely on IEC 62087 (upcoming version)
- New test loop
- New ABC test method

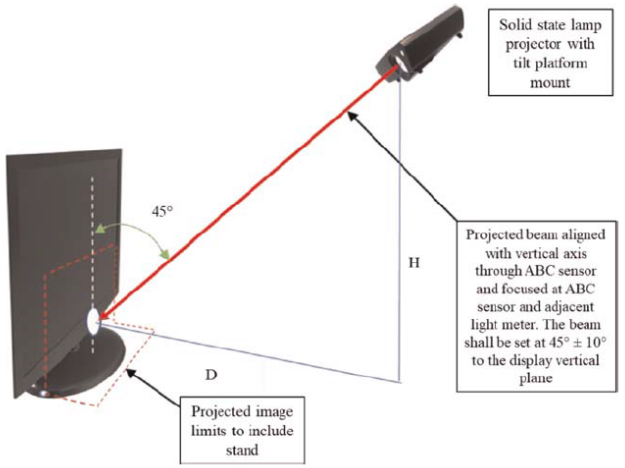
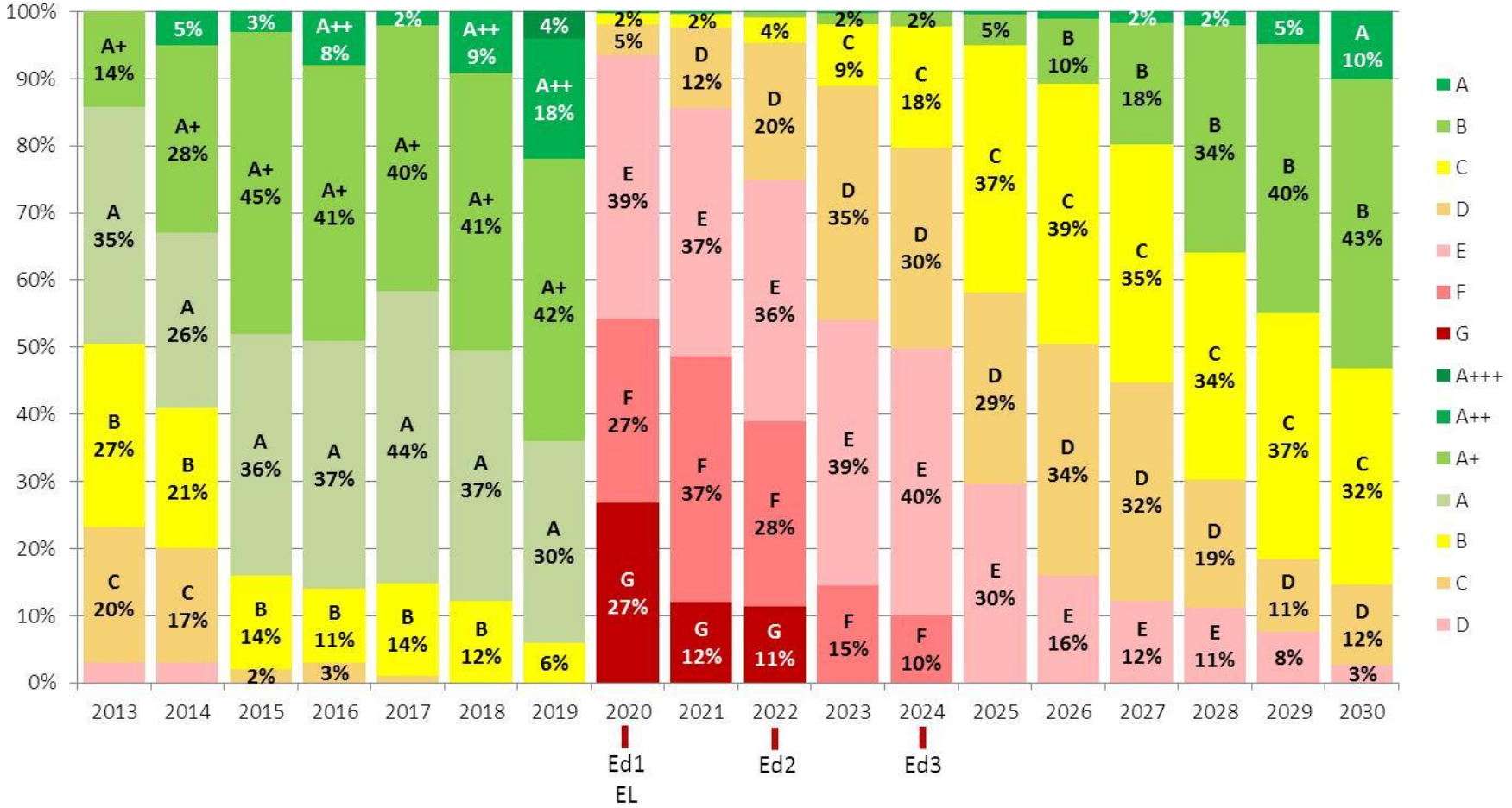



*Figure 1: Physical set up of Display and ambient light source*

# Overview of the EU regulation (5)

## Setting of ambition levels



# China TV MEPS and label development

**GB 24850-2010**
MEPS for TVs
firstly published

**GB 24850-2013**
MEPS for TVs revised

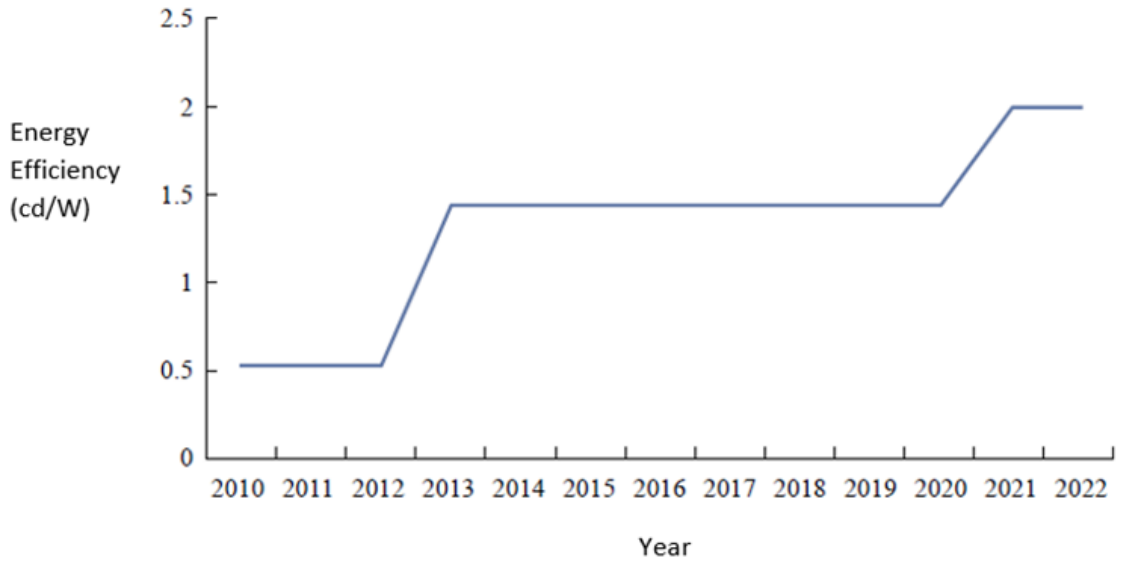
**GB 24850-2020**
MEPS for TVs revised,
covers TVs
and set-top boxes

2010 | 2011 | 2013 | 2016 | 2020

## Start energy label for TVs


## Upgrade energy label for TVs

# China LCD TVs energy efficiency requirements improvement




MEPS of LCD panel TVs in various editions of Standards

- GB24850-2010, with a fixed MEPS (energy efficiency index) of 0.6 cd/W for LCD TVs .
- GB 24850-2013, with a fixed MEPS of 1.3 for LCD TVs.
- GB 24850-2020, with a fixed MEPS of 2.0 for LCD TVs.

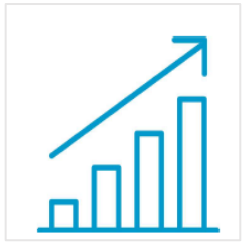
In comparison with the first edition in 2010, a three-fold improvement has been achieved for the MEPS of LCD TVs.

Source: China energy label 15th anniversary report, CNIS,2020

# India - BEE's Labeling Program on Television

## 2009
Launched voluntary policy for Color Television (CTV)

## 2010
Common Star Rating Plan for CRT, LCD, LED & Plasma TVs

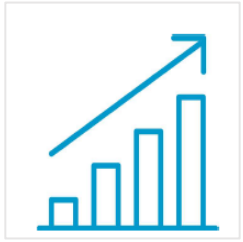


## 2014
i)Upgradation of CTV Energy Performance level by 2 Stars

ii) Distinct Star rating plan for CRT, LCD, LED & Plasma TVs


## 2016
Mandatory of Color Television Policy.

Upgradation of Energy Performance level by 4 stars



## 2019
Upgradation of CTV-Energy Performance level by 1 star

## 2022
Current star ratings in force since July 2022 for HD and since January 2022 for UHD

# India - BEE's Labeling Program on Television

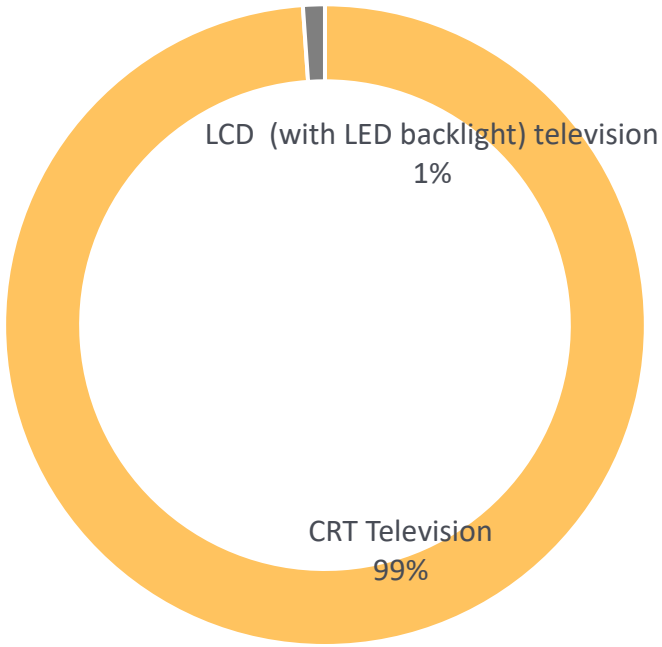
**AEC = (Pa x 6 + Ps x 12) x 0.365 kWh/ annum**

| Annual Energy Consumption (AEC) for resolution up to 1920x1080 (Valid from 01 July 2022 to 31 December, 2024) | |
|---|---|
| **Star 1** | (0.022 x A) + 2.63 < AEC≤ (0.024 x A) + 2.63 |
| **Star 2** | (0.019 x A) + 2.63 < AEC≤ (0.022 x A) + 2.63 |
| **Star 3** | (0.016 x A) + 2.63 < AEC≤ (0.019 x A) + 2.63 |
| **Star 4** | (0.013 x A) + 2.63 < AEC ≤ (0.016 x A) + 2.63 |
| **Star 5** | AEC≤ (0.013 x A) + 2.63 |

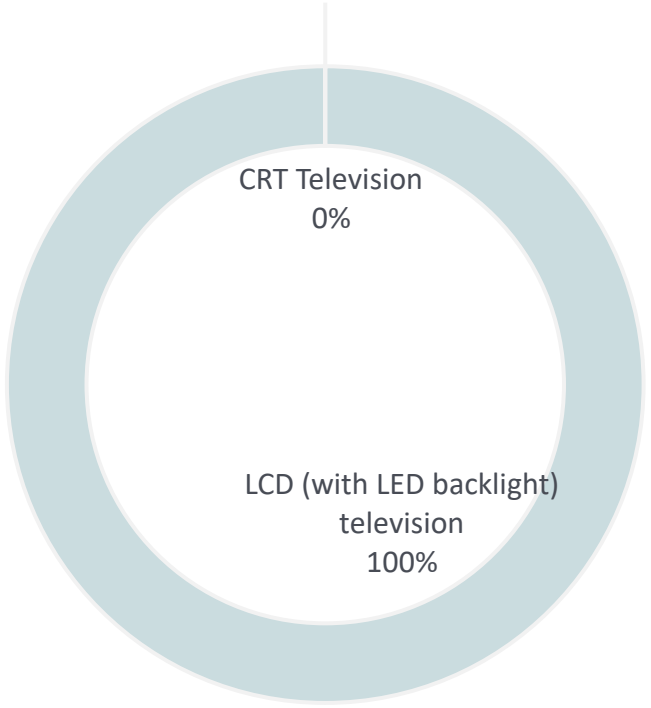
| Annual Energy Consumption (AEC) for UHD (Valid from 01 January 2021 to 31 December 2022) | |
|---|---|
| **Star 1** | (0.0271 x A) + 6,226 < AEC≤ (0.0325 x A) + 6.226 |
| **Star 2** | (0.0217 x A) + 6.226 < AEC≤ (0.0271 x A) + 6.226 |
| **Star 3** | (0.0174 x A) + 6.226 < AEC≤ (0.0217 x A) + 6.226 |
| **Star 4** | (0.0139 x A) + 6.226 < AEC ≤ (0.0174 x A) + 6.226 |
| **Star 5** | AEC≤ (0.0139 x A) + 6.226 |

# India - BEE's Labeling Program on Television

## Color TV Market by technology, 2009




## Color TV Market by technology, 2021



# Data from India

## Report - Development of Efficiency Policy for Ultra High Definition Televisions in India

https://www.clasp.ngo/research/all/development-of-efficiency-policy-for-ultra-high-definition-televisions-in-india/

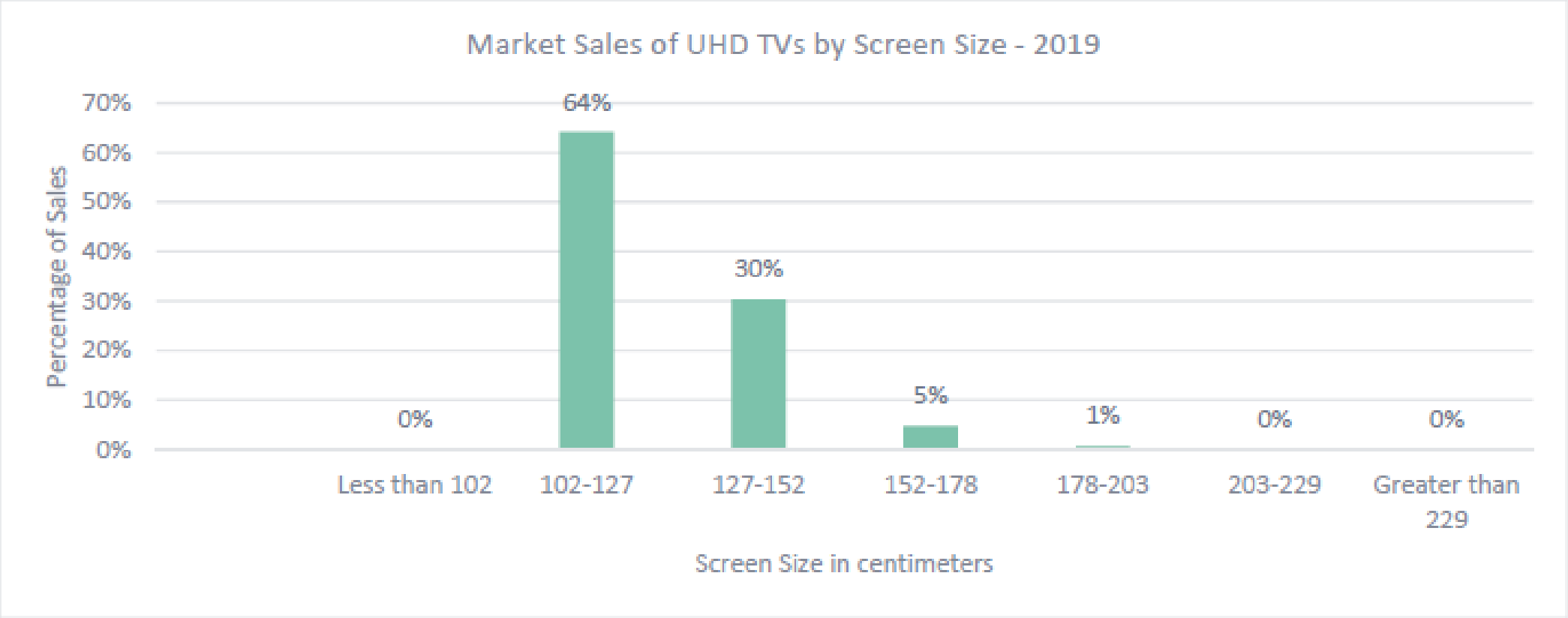
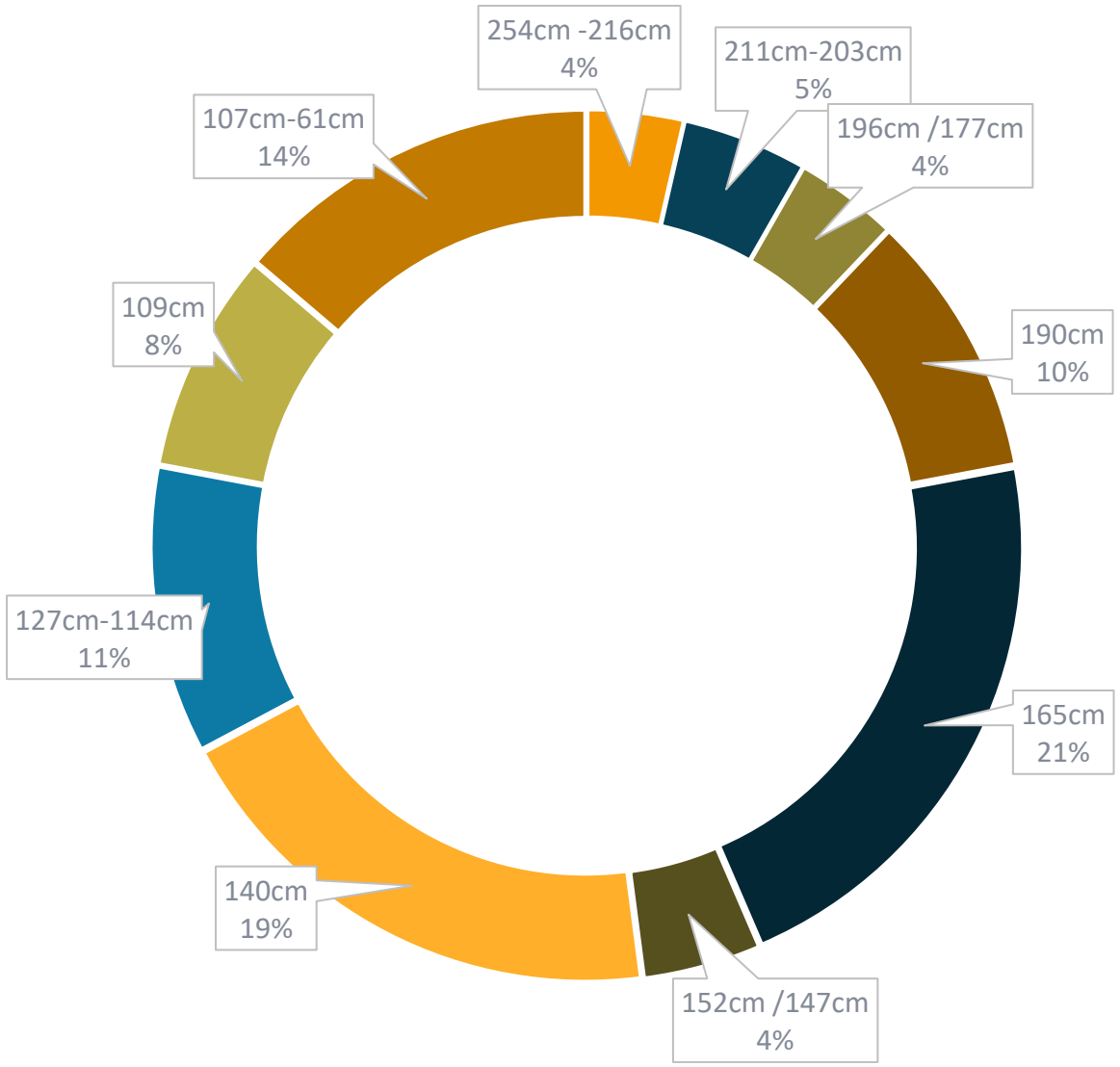



FIGURE 9 SALES OF UHD 4K AND 8K TELEVISIONS BY SCREEN SIZE

# Preliminary Findings

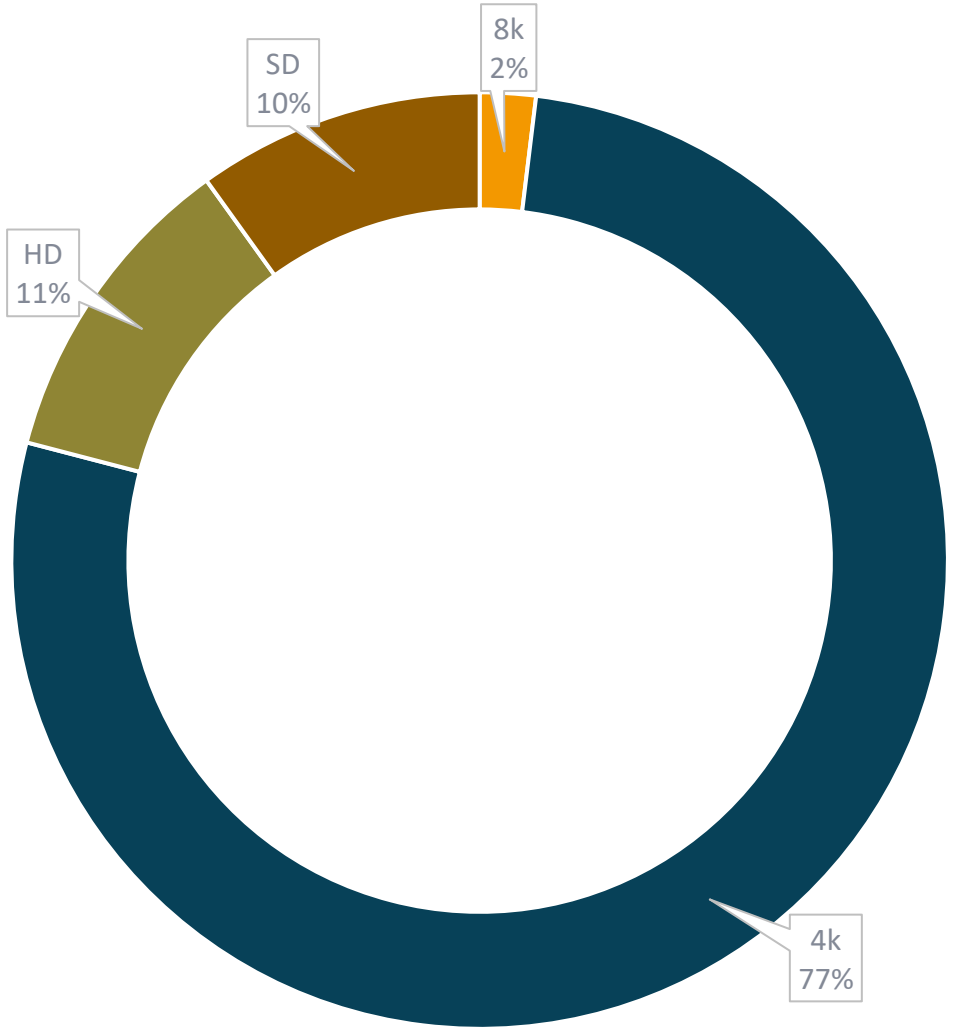
# Preliminary Data Findings – Models




- 50% across 3 sizes (140cm / 165cm / 190cm)
- 74% across 6 sizes (140cm / 165cm / 190cm / 81cm / 109cm / 127cm)
- Average size is 147cm  (4%)
- 22 size ranges available -

- Average price of a 140cm / 55’: R12950
- Average price of a 165cm / 65’ : R24157
- Average price of a 190cm  75‘ : R35942
- Pricing range is R189000 – R2399
- Screen size range is 254cm -61cm

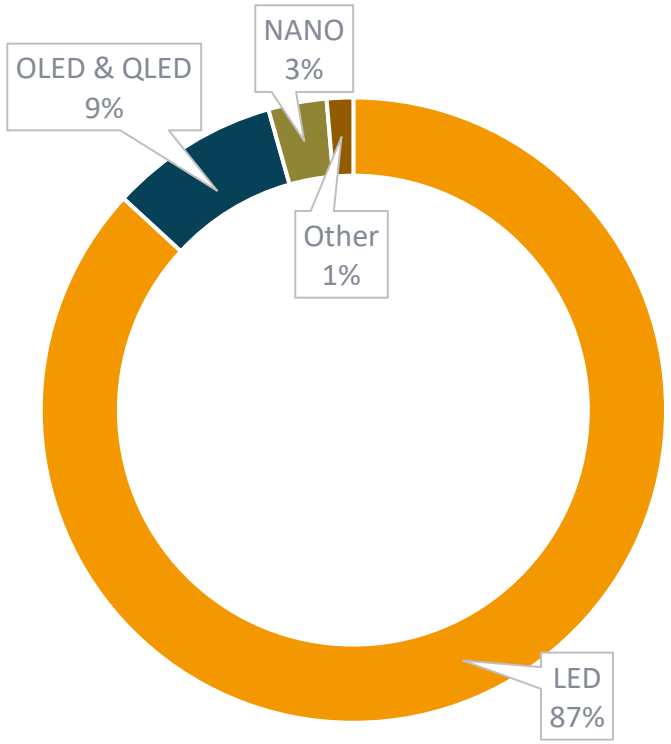
# Preliminary Data Findings – Resolution



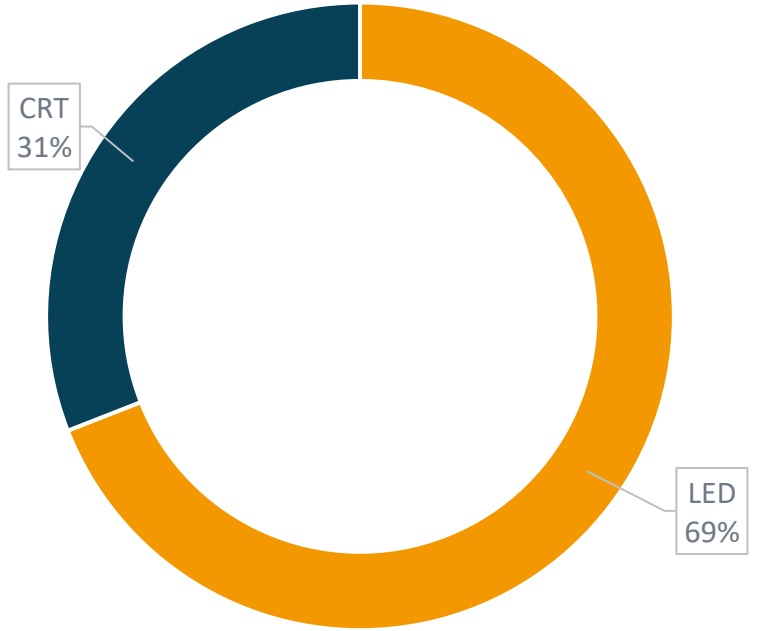

- 79% is UHD (4k and 8k)
- UHD is resolution (3840 x 2160) or greater.
- 11% is HD (1920 x 1080)
- Remaining 10% is SD (1366 × 768 )
- 8k predicted to be 50% of market by 2030, dependent on suitable content & technology advances
- Direct correlation between high resolution and increased energy consumption.

# Technology Type: Online vs SARS Import Stats

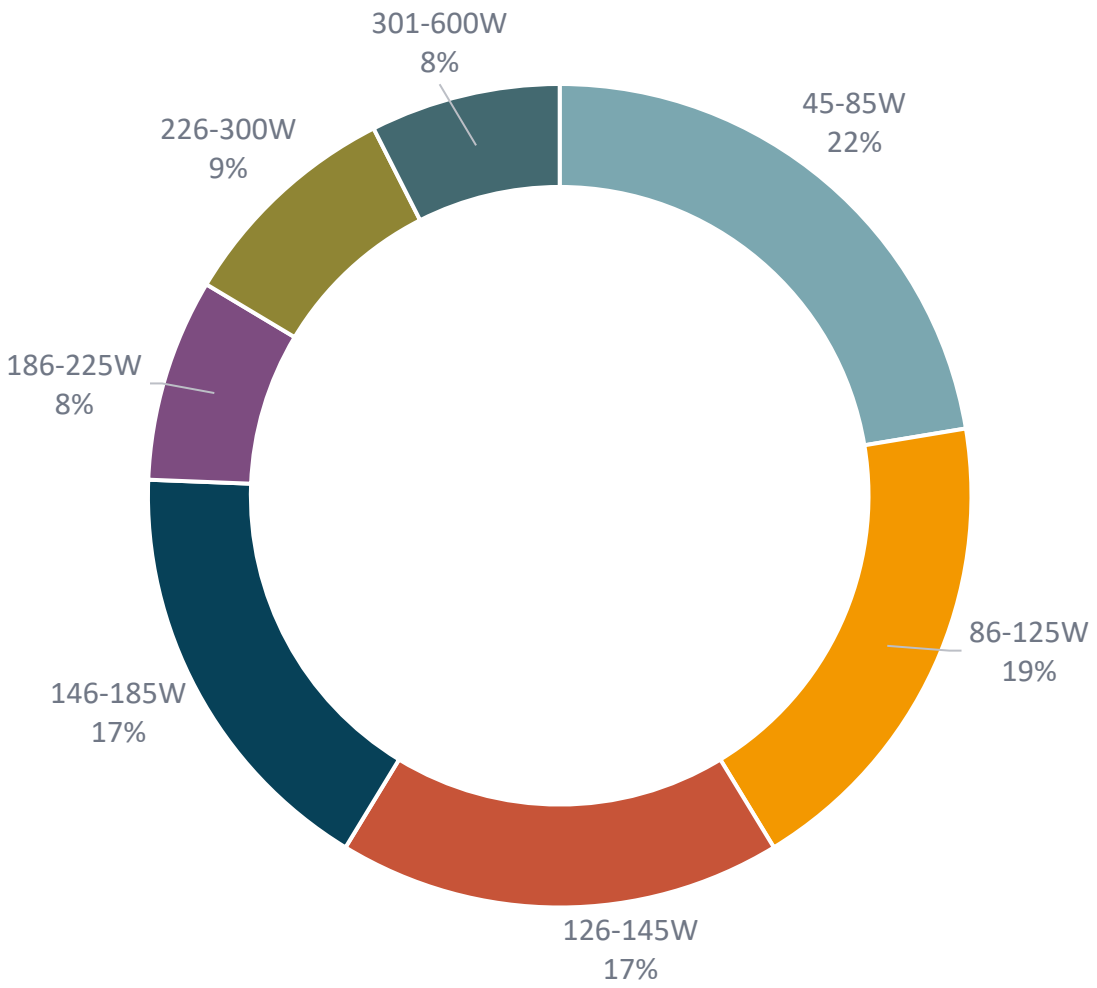
- LED technologies dominate the market.
- Combined LED variations include ULED, QLED, OLED – account for 96% of market
- CRT & Plasma technologies not advertised online
- Laser is found on high-end large-screen models




- SARS report for TV imports 2018-2021
- CRT are more energy intensive than LEDs
- Begs the question – where are they?



# Rated Energy Consumption




- Power range of 32 -564W
- Total of 201 models used – available data.
- 58% below 150W
- 75% below 185W
- Correlation between screen size and consumption is clear.
- Correlation between resolution and consumption is clear.
- 8k TVs use more energy – consistently over 300W
- Efficiency is lost beyond the 65 inch / 165cm threshold.
- Only standard consumption ratings were used, does not account for max performance features. (HDR)

# TV and Monitor Sales Estimates

| South Africa | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| TVs | 1,25m Units | 1,25m Units | 1,38m Units | 1,5m Units |
| Computer Monitor | 1,15m Units | 1,2m Units | 1,3m Units | 1,35 Units |

Sources: Euromonitor Report, Urban Econ, SARS

# Next Steps

# Next Steps

- Consultation with
  - Local importers
  - Retailers
  - South African Bureau of Standards
  - SARS

- Presentation of final report to stakeholders for comment
- Finalise and submit report and recommendations to SANEDI/DMRE