



20 May 2026

## **UNEP-U4E Webinar (Africa session)**

**Launch of the updated Country Savings Assessments and the revised Model Regulation Guidelines for Air Conditioners and Air-to-Air Heat Pumps**

[www.unep.org](http://www.unep.org)

# Webinar Housekeeping Rules



***Please post your questions in the chat during the presentations.***



***Speakers will answer questions during the Q&A session at the end of the Webinar.***



***This Webinar will be recorded and posted at UNEP-U4E's website, along with the presentations.***

# Agenda

Time (CEST)	Agenda item	Presenter/Moderator
<b>14:00 – 14:05</b> <i>5 min</i>	<b>Housekeeping</b>	<b>Mzwandile Thwala</b> Energy Efficiency Specialist, UNEP-U4E
<b>14:05 – 14:15</b> <i>10 min</i>	<b>Opening</b> <i>Introduction and Overview of UNEP-U4E and Tools</i>	<b>Patrick Blake</b> Programme Manager, UNEP-U4E
<b>14:15 – 14:25</b> <i>10 min</i>	<b>Deep Dive and Demo: Country Savings Assessments</b> <i>Overview of the CSA methodology, coverage and key improvements</i>  <i>Demonstration on how countries can use the tool to quantify and communicate the benefits of energy efficiency policies with examples from Africa</i>	<b>Saikiran Kasamsetty</b> Energy Efficiency Specialist, UNEP-U4E
<b>14:25 – 14:40</b> <i>15 min</i>	<b>Deep Dive: Model Regulation Guidelines</b> <i>Overview of the Guidelines: structure, scope, and guidance on regulatory design for MEPS on air conditioners and air-to-air heat pumps. How the Guidelines complement the CSAs</i>	<b>Miquel Pitarch Mocholi</b> International Cooling Expert, UNEP-U4E
<b>14:40 – 14:50</b> <i>10 min</i>	<b>Regional Perspectives: Using Evidence to Drive Policy</b> <i>A regional perspective on how country-level evidence and regulatory frameworks are supporting the transition to efficient appliances</i>	<b>Nickson Bukachi Ogeri</b> AFREC Energy Specialist
<b>14:50 – 15:10</b> <i>20 min</i>	<b>Q&amp;A</b>	<b>Mzwandile Thwala</b> Energy Efficiency Specialist, UNEP-U4E
<b>15:10 – 15:15</b> <i>5 min</i>	<b>Wrapping up</b>	<b>Patrick Blake</b> Programme Manager, UNEP-U4E



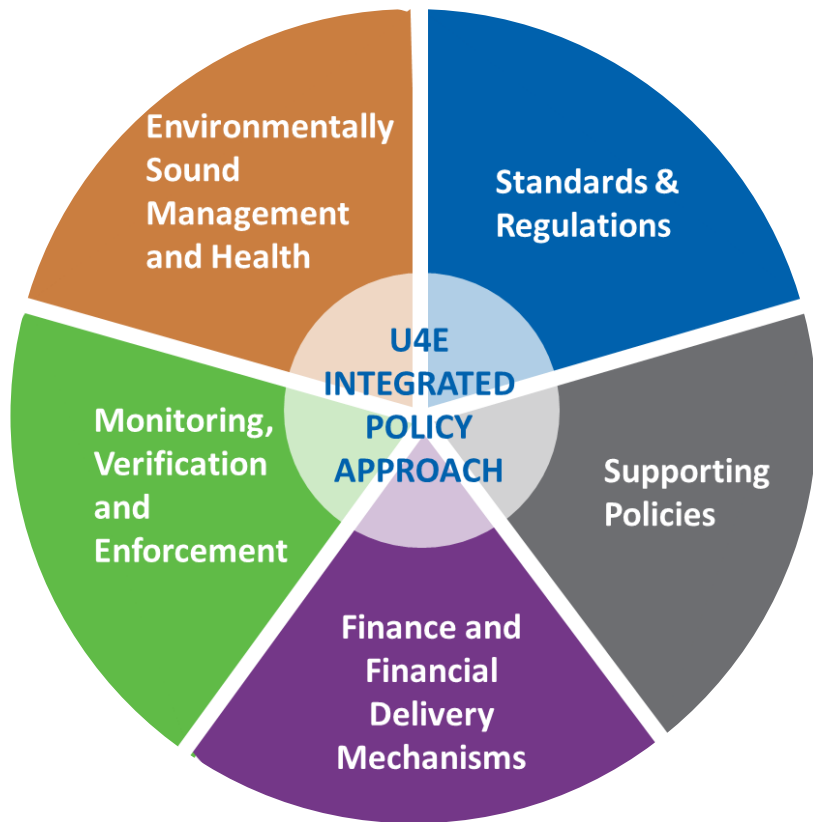
# Opening remarks

Patrick Blake  
Programme Manager, UNEP-U4E

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# UNEP United for Efficiency (U4E) Overview

**United for Efficiency (U4E)** is a UNEP-led global initiative that **helps countries accelerate the transition** to energy-efficient and climate-friendly equipment, systems, and market practices.



**Why this matters:** Energy use and emissions from equipment and systems are growing rapidly, especially in emerging and developing economies.

**What U4E does:** Develops practical policy guidance and tools and supports countries in adapting and implementing them in national and regional markets.

**How U4E works:** Promotes an integrated policy approach — from MEPS, labels, and procurement criteria to compliance, market surveillance, and implementation support.

**Why this is relevant today:** Stronger and better-aligned policies can reduce energy use and emissions, support regional harmonization where appropriate, and help guide markets toward more efficient and climate-friendly technologies.

UNEP U4E helps **translate global guidance and best practice into national and regional policy implementation.**

# UNEP-U4E – Tools and Guidance



Country/Regional Savings Assessments



Model Regulation Guidelines

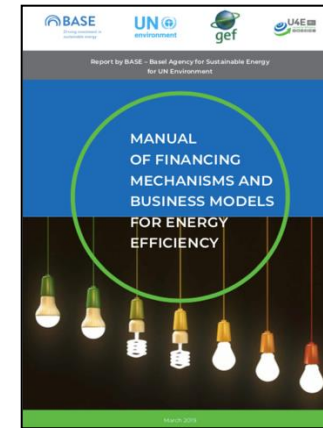
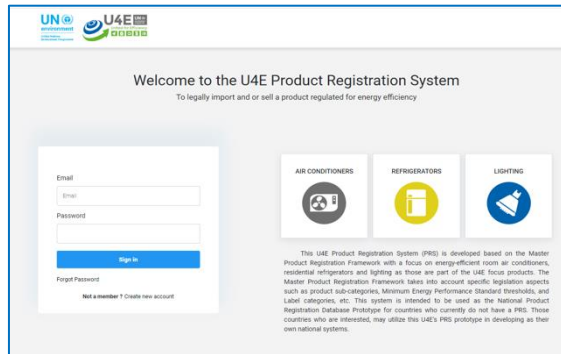


Sustainable Procurement Criteria and Lifecycle Cost tool

Minimum Energy Performance Requirements (MEPR)		Minimum Energy Performance Requirements (MEPR)		Minimum Energy Performance Requirements (MEPR)		Minimum Energy Performance Requirements (MEPR)		Minimum Energy Performance Requirements (MEPR)		Minimum Energy Performance Requirements (MEPR)	
Product Category	Minimum Energy Performance Requirements (MEPR)	Product Category	Minimum Energy Performance Requirements (MEPR)	Product Category	Minimum Energy Performance Requirements (MEPR)	Product Category	Minimum Energy Performance Requirements (MEPR)	Product Category	Minimum Energy Performance Requirements (MEPR)	Product Category	Minimum Energy Performance Requirements (MEPR)
Refrigerators	...	Refrigerators	...	Refrigerators	...	Refrigerators	...	Refrigerators	...	Refrigerators	...
Air Conditioners	...	Air Conditioners	...	Air Conditioners	...	Air Conditioners	...	Air Conditioners	...	Air Conditioners	...
Air-to-Air Heat Pumps	...	Air-to-Air Heat Pumps	...	Air-to-Air Heat Pumps	...	Air-to-Air Heat Pumps	...	Air-to-Air Heat Pumps	...	Air-to-Air Heat Pumps	...



Product Registration System (Guides & Prototype)



Financial Mechanisms

Available here:





# Deep Dive and Demo: Country Savings Assessments

Saikiran Kasamsetty  
Energy Efficiency Specialist, UNEP-U4E

[www.unep.org](http://www.unep.org)

# What Are the Country/Regional Savings Assessments?



## Objective

Savings analysis on **potential impact** of adopting Minimum energy performance standards policies aligned with Model Regulation guidelines for **lighting products, industrial electric motors, distribution transformers, air conditioners, residential refrigerators and commercial refrigeration equipment.**

These **product categories** are responsible for **>50% of electricity usage today.**



## Overview

Provides detailed **energy, environment and economic benefits**



**Electricity Savings**



**Associated Carbon Mitigation**



**Electricity bill Savings**

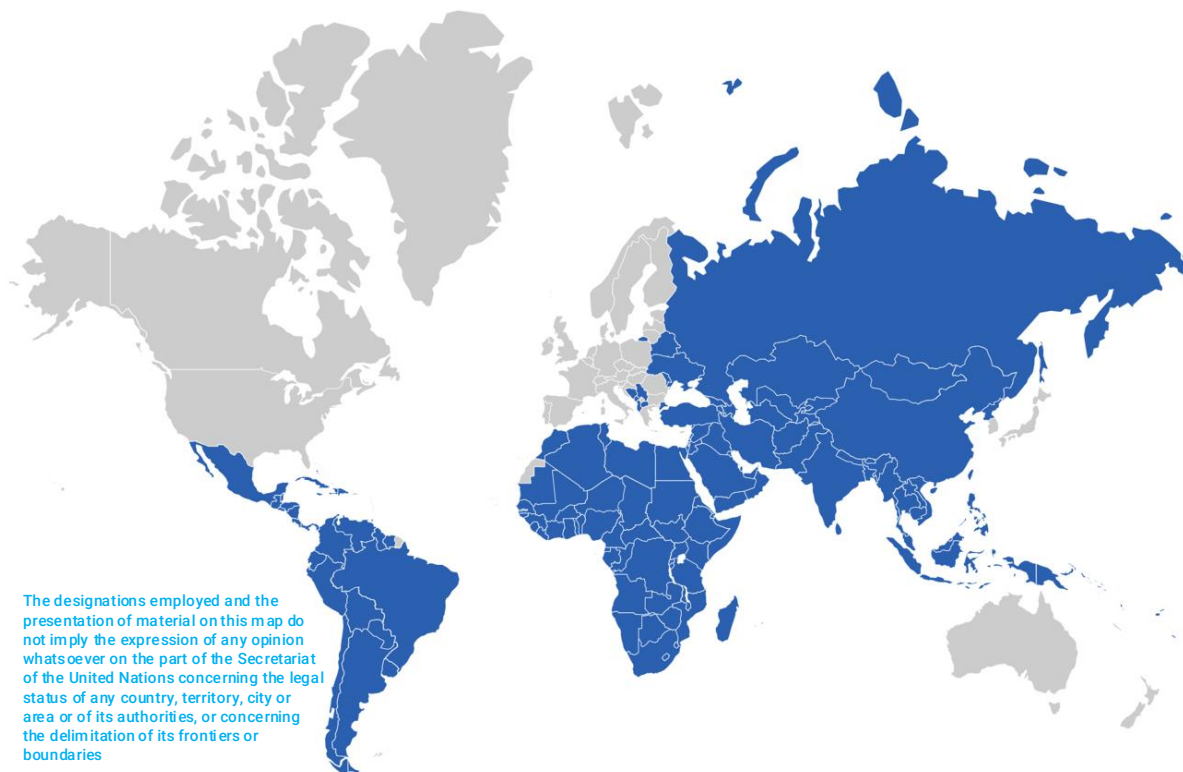


**Power Plants Avoided**



**Direct emissions (refrigerant)**

Available for 156 developing and emerging economies and several regions



The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries



Individual country and regional reports are available in 4 languages: English, French Spanish, and Portuguese.

# Global Impact at a Glance

Annual Savings Potential in 2050 by MEPS Policy implementation aligned with U4E recommended levels

**1,210 TWh**

annual electricity savings



**770 Mt CO<sub>2</sub>e**

Indirect emissions avoided annually



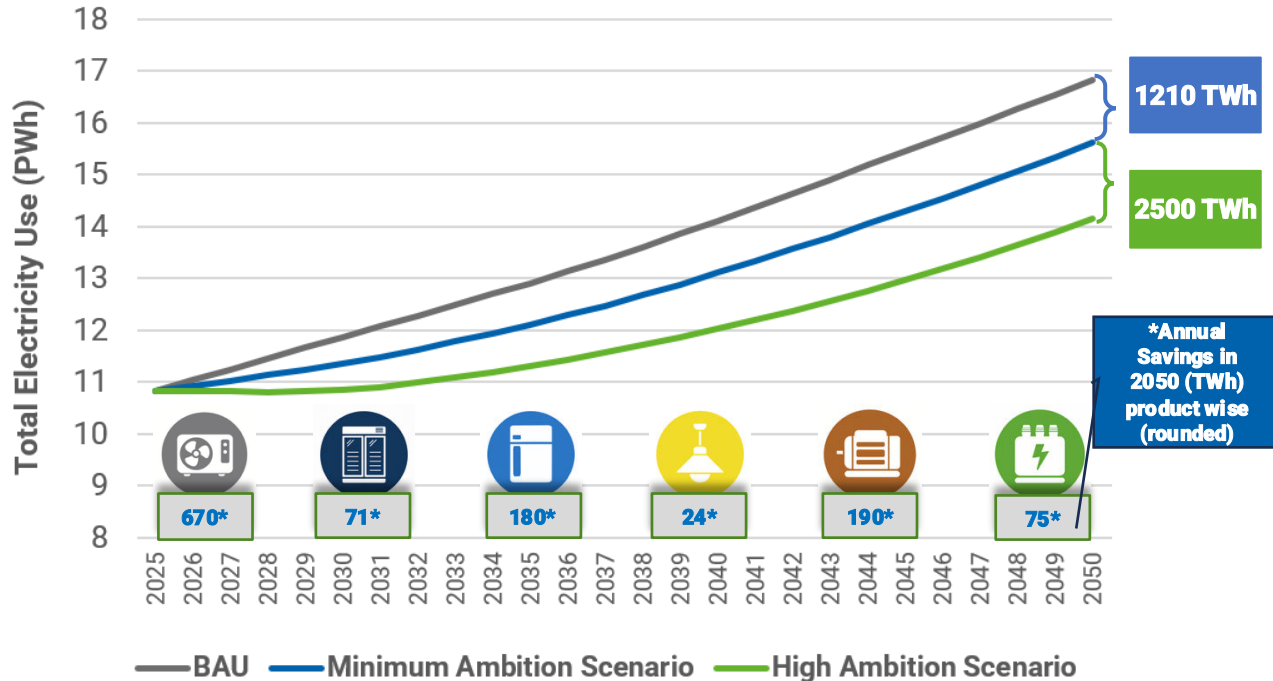
**USD 110 billions**

annual electricity bill savings



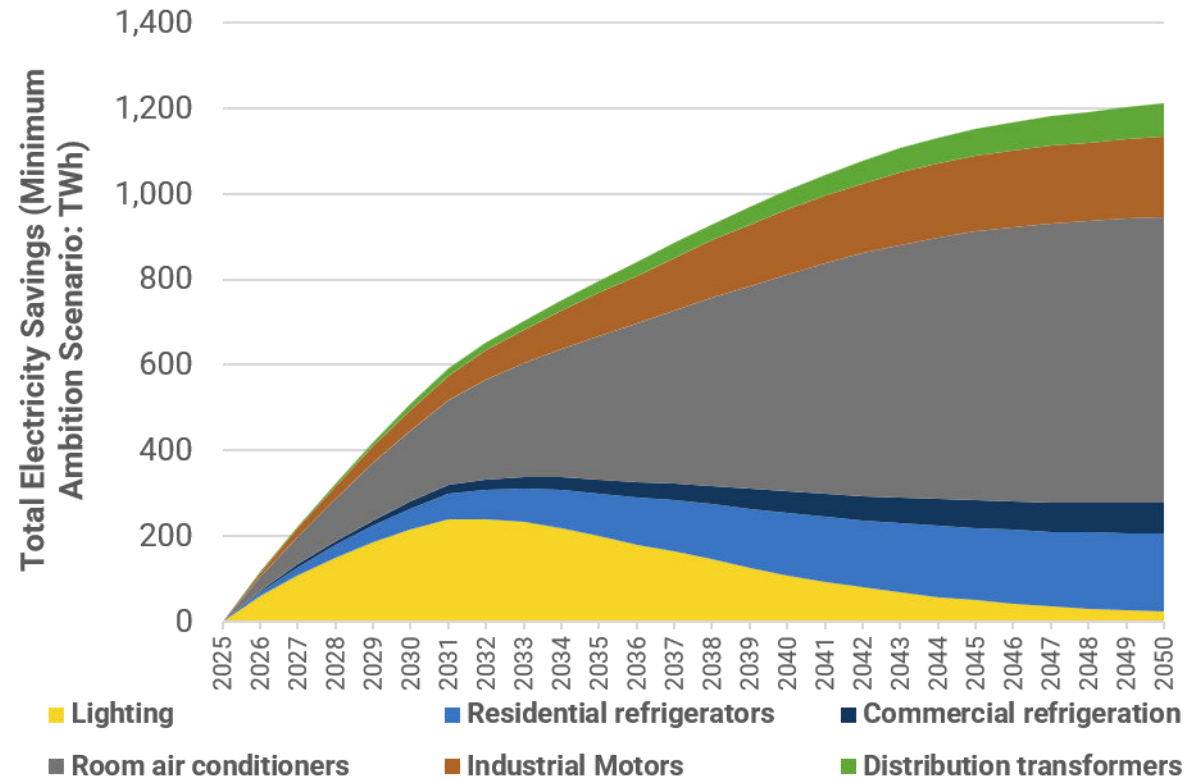
**550 Power plants**

avoided power generation capacity (500 MW each)



Annual Savings in 2050 Globally by transforming to Energy efficient Appliances

Annual Savings in 2050 are equivalent to the combined annual electricity consumption of Indonesia, Brazil, and Algeria









Cumulative Savings Globally by 2050

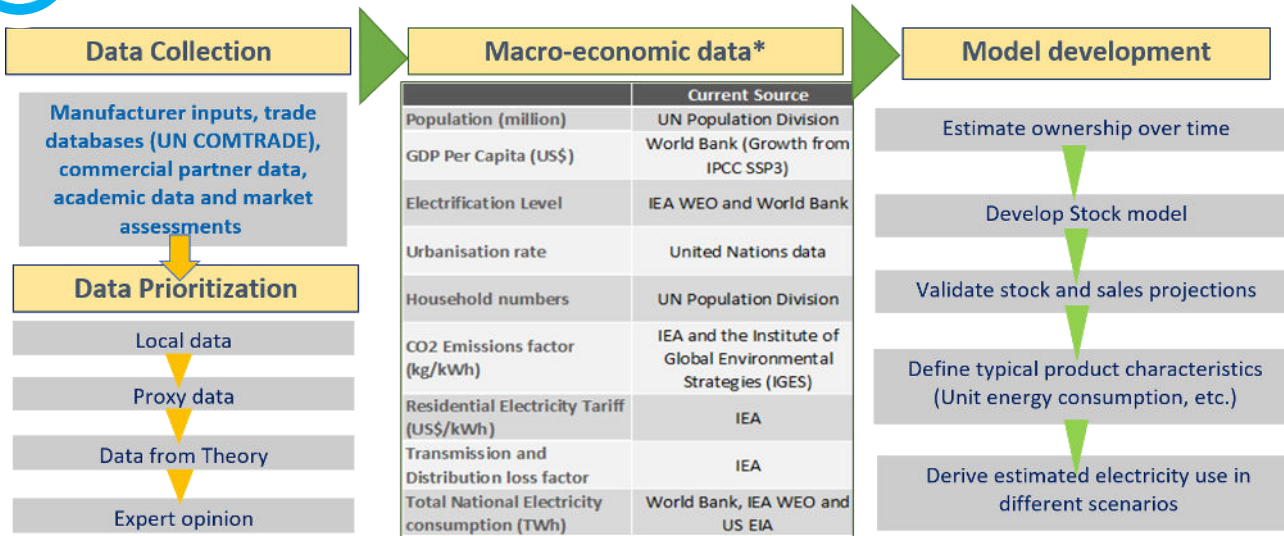
# Overview of CSA Modelling Approach

## Overarching Approach

The following are the overarching methodologies for stock estimation, along with assumptions for each product\*:

- 


**Bottom-up approach** involved developing ownership levels to 2050 which came from known market data based on relationship to purchasing power for GDP levels, and utilizing the unit energy consumption (UEC), and triangulating with the growth data available across various policy databases
- 

**Top-down approach** was used based on data on total electricity use in each country and the historical industrial GDP data respectively
- 
**Hybrid approach** included a bottom-up approach to estimate the stock of each lamp type and a top-down analysis to project electricity use into the future.

## Energy Modelling



The **energy savings potential** is calculated till 2050 and is computed based on **the difference between total energy consumption in the ambition scenarios and that of the BAU scenario**

- Business As Usual (BAU):** assumes no policy interventions
- Minimum Ambition:** assumes MEPS are implemented in line with the UNEP U4E model regulations
- High Ambition:** Assumes MEPS implemented at a more stringent level

\* Denotes typical sources. Kindly refer [here](#) for detailed assumptions and methodology

# What's new in the 2026 CSA version?

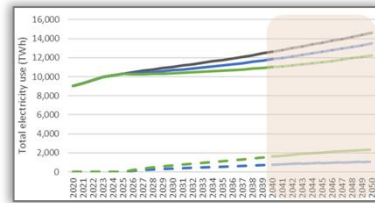
1

## Updated Macro economic Parameters

Population, GDP/Capita, Industrial GDP, Total Electricity Use, etc.

2

## Extending Timelines to 2050 from 2040



3

## Product Scope Expansion

Inclusion of new/updated MEPS (for Air conditioners, motors, etc.)

- Select countries/ regions, desired years
- Toggle between ambition levels
- Interactive data dashboards

Flexible and Dynamic Analysis Tool

4

## WEBSITE

Generate PDF Report

Report Language:  
English  
Français (French)  
Português (Portuguese)  
Español (Spanish)

Appliances  
ALL LIGHTING COOLING EQUIPMENT

Select Cooling Appliances:  
Commercial Refrigeration Residential Refrigerators Air Conditioners

Buttons: CLOSE GENERATE PDF

Available for download in 4 languages

Region Subregion Sub-subregion Run analysis to Comparison year Count savings from

Predefined Regions: ASIAN, CENTRAL AFRICA, EAST AFRICA, NORTH AFRICA, SADC, WEST AFRICA

Select Countries (Optional): Brunei Darussalam, Cambodia, Indonesia, Lao Peoples Democratic Republic, Malaysia, Thailand, Viet Nam, Timor-Leste

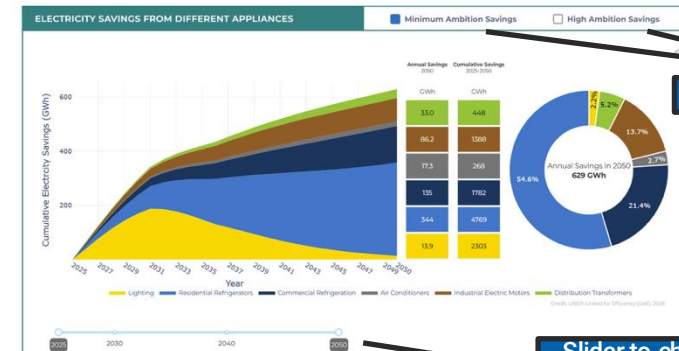
Map showing selected countries in blue.

Appliance Energy Consumption (TWh) - 2050

134	133	132
82	63	34
31	24	18
102	184	161
01	408	410
28	28	22

Allows selection of specific years, and desired countries

Key Findings; Heat maps to identify priority products in region/country



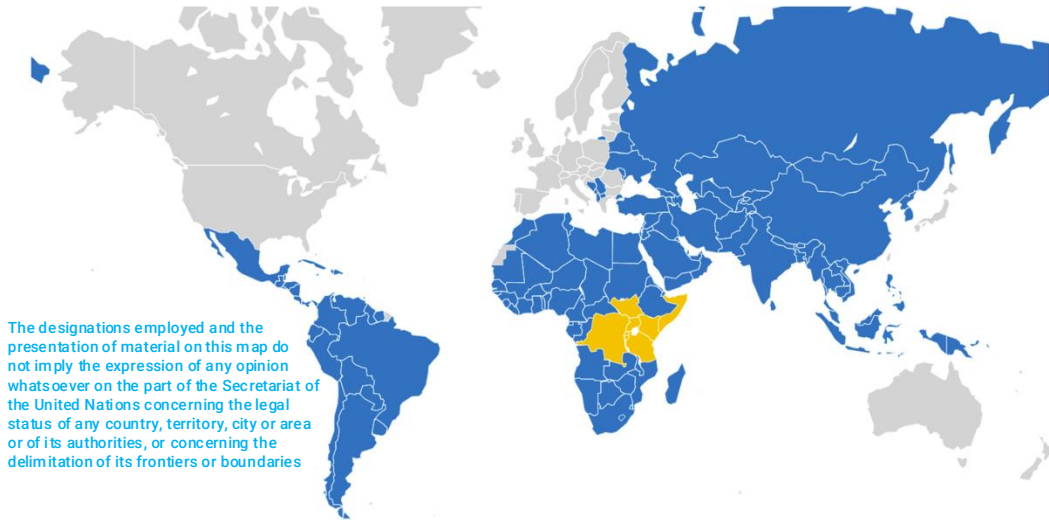
Toggle to change the scenario

Slider to change the year range



# What a Typical Regional Saving Assessment Report Entails

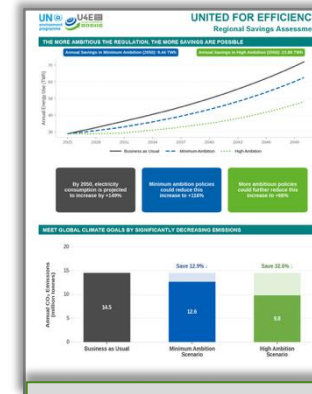
Region Sub-region Sub-subregion Selected Country



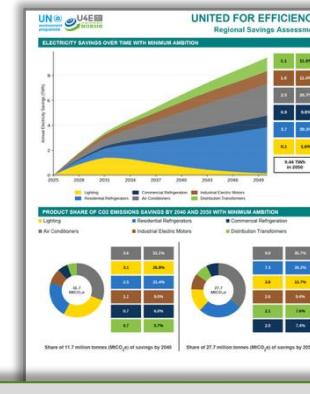
The designations employed and the presentation of material on this map do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries



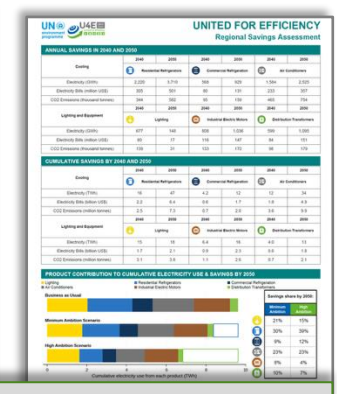
Benefits Overview



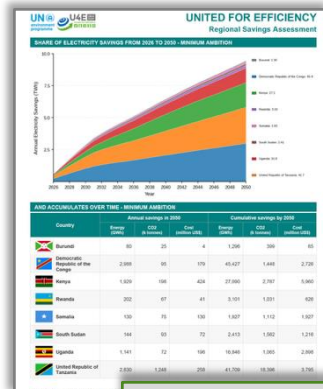
Annual and Cumulative Savings: electricity, economic and emissions under various scenarios for all six products regionally



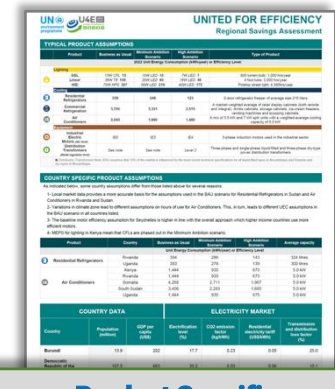
Product Specific Assumptions country wise



Key Data Sources



Country Specific Savings



Available in French!

RSA Reports available for major (sub) regions across the World in 4 languages

Explore CSA/RSA at <https://csa.united4efficiency.org/>



# Who can use the CSAs and what can they support?

The CSA tool supports a wide range of stakeholders and can inform decisions across the policy cycle, from early prioritisation to implementation and regional cooperation.

## What can the CSAs support?

The CSAs support countries and stakeholders in:

- Making **evidence-based policy decisions**
- Identifying **high-impact product categories** to maximise energy and environmental savings
- Assessing the **potential benefits of different policy** ambition levels
- Supporting **national (e.g. NDCs) and regional climate** and energy efficiency planning
- Strengthening **regional cooperation** on shared climate goals

## Who can use the CSAs?

The tool supports a wide range of stakeholders, including:

- Policymakers and regulators
- Energy planners and utilities
- Development partners
- Researchers and analysts

# Country/Regional Savings Assessments



<https://csa.united4efficiency.org/>



# Deep Dive: Model Regulation Guidelines

Miquel Pitarch  
Cooling Policies Expert, UNEP-U4E

[www.unep.org](http://www.unep.org)

# UNEP-U4E MRGs: Supporting Effective AC Regulations

**First published in 2019 and updated in 2026**, the UNEP-U4E MRG **supports countries developing or revising regulations** for air conditioners and reversible air-to-air heat pumps.

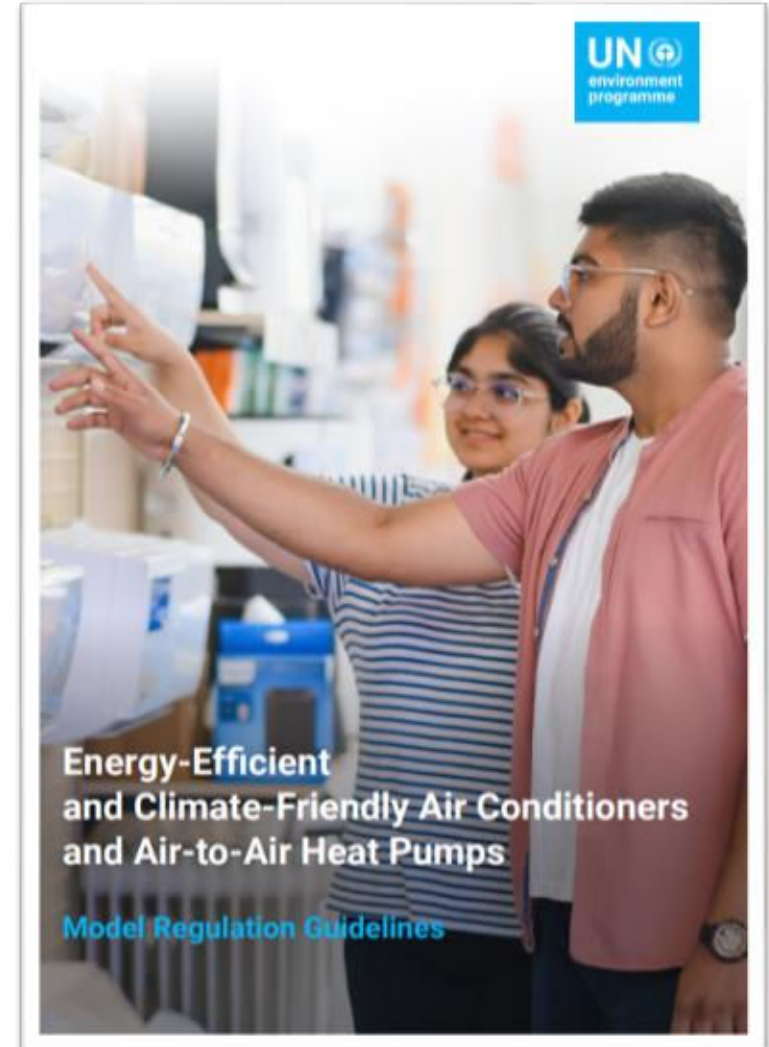
It provides recommended provisions on **MEPS levels, labelling recommendations and refrigerant requirements, aligned with international best practice.**

The 2026 update reflects **lessons from implementation, market data and expert consultation**, helping the guidance remain practical, ambitious and globally relevant.

**2019**  
First UNEP-U4E  
MRG published



**2026**  
Updated MRG with  
expanded scope and  
revised guidance

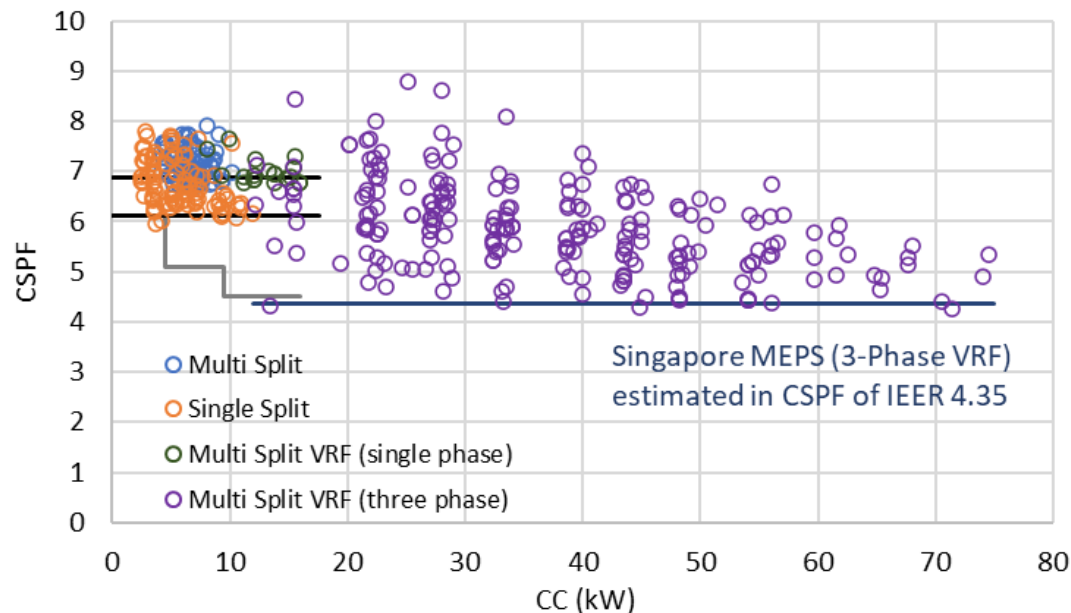


# Developing the 2026 UNEP-U4E MRG Update

The update process started in 2024 with a structured review of the 2019 MRG **to identify where the guidance needed to be strengthened, clarified or expanded**

In 2025, UNEP-U4E, with the support of LBNL, carried out **technical review and analysis of 1,600+ models from Singapore and Australia**

Consultation included a **40+ member Policy Working Group and 90+ comments from 8 institutions**, with broad support for the update and its market relevance



- **Published in May 2026**  
Updated MRG with expanded scope and revised technical guidance.
- **Supporting Information document**  
Provides further details on the data analysis and technical basis.

# What the 2026 MRG Provides

The MRG brings together the main regulatory building blocks countries need to develop or update effective AC regulations, while allowing adaptation to national market conditions and policy priorities

## **Scope & definitions (expanded):**

Clear product categories and definitions, expanded and clarified in 2026.

## **Refrigerant requirements:**

GWP/ODP guidance aligned with climate-friendly cooling policies.

## **International reference test standards:**

Recognized test methods and seasonal performance metrics.

## **Safety considerations:**

References to relevant safety standards and safe product deployment.

## **Efficiency requirements (HSPF added):**

Cooling and heating recommendations using CSPF, HSPF and APF across 20 climate zones.

## **Conformity & market surveillance (improved):**

Supporting guidance for implementation and compliance frameworks.

## **Labelling guidance (improved):**

Intermediate and high-efficiency levels, with improved examples for label design.

## **Super-efficient AC annex (new)**

Informative performance specifications for super-efficient air conditioners.

# Expanded Scope of the 2026 MRG

- Compared with 2019 MRG, the 2026 update expands the product scope and increases the capacity limit, allowing adaptation to national circumstances.
- **Why this matters:** Larger split, multi-split/VRF and ducted systems can exceed **25% of new cooling capacity sales in Africa** (UNEP-U4E estimates). The expanded scope supports **countries ready to regulate** these products, while allowing national adaptation.

## Capacity limit:

**2019 MRG**  
**16 kW**

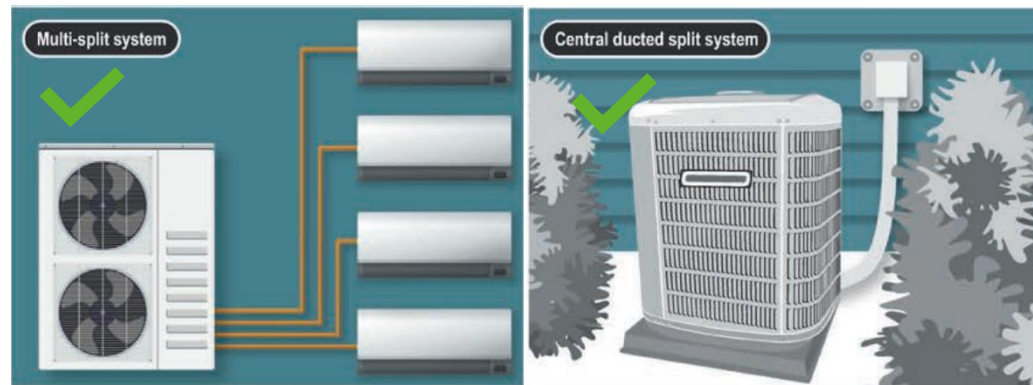


**2026 MRG**  
**70 kW**

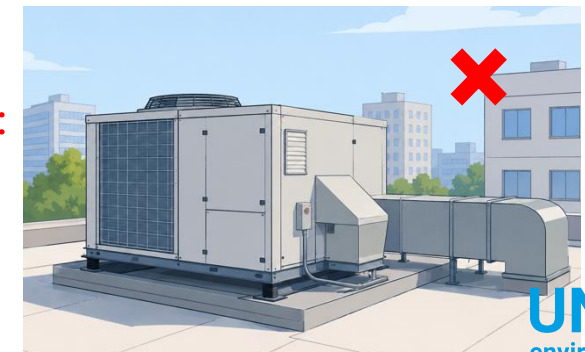
**Covered since 2019:**  
**Portable, Window,**  
**Single-split**



**Added in 2026:**  
**Multi-split/VRF,**  
**Ducted-split**



**Outside**  
**current scope:**  
**Rooftop and**  
**other**  
**packaged**  
**units**



Source of images: IEA (2018) The Future of Cooling

# Recommended MEPS and Refrigerant Requirements

## Minimum Energy Performance Standards (MEPS)

- **CSPF** is the main cooling metric
- For reversible units, countries can **regulate cooling and heating separately** using **CSPF and HSPF**, or use the **combined APF** metric
- Recommended levels are **target values aligned with international best practice**.
- Countries may adopt **a phased schedule** where needed by local conditions, with **future steps clearly indicated in advance** to give industry a predictable signal.

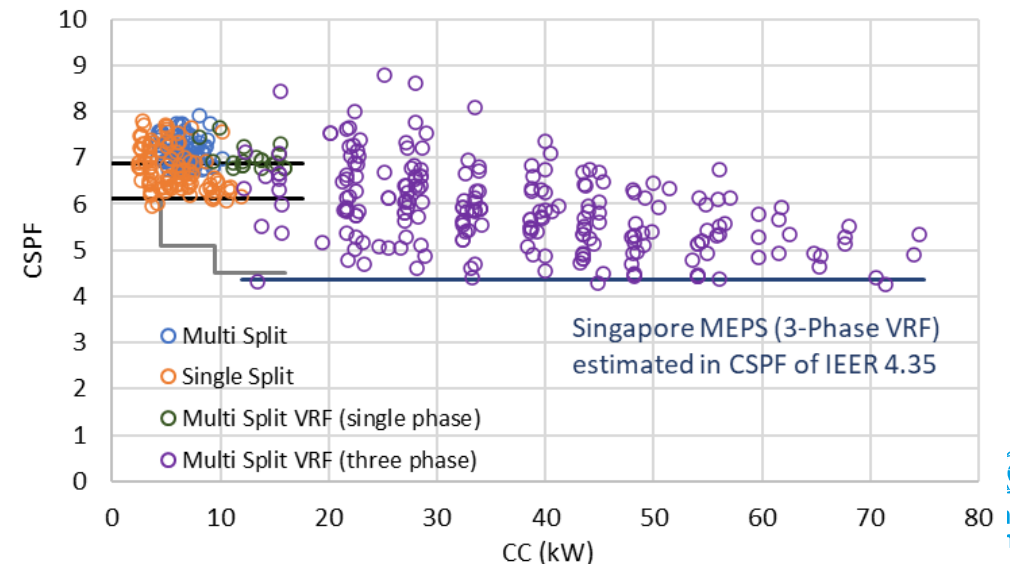
Category	≤ 6 kW	> 6 kW to 14 kW	> 14 kW to 70 kW
Cooling (CSPF)	<b>6.10</b>	<b>5.10</b>	<b>4.50</b>
Heating (HSPF)	<b>4.60</b>	<b>3.60</b>	<b>3.30</b>
Combined (APF)	<b>5.00</b>	<b>4.00</b>	<b>3.60</b>

Note: Table levels shown for **ISO default climates**

## Refrigerant Limits

- **ODP = 0**
  - Self-contained units: **GWP < 150**
  - Split system: **GWP < 750**
- \*Exception where needed to comply with safety standards

Singapore data indicate **market availability** at MRG levels:



# Labelling Guidance: Supporting Clear Market Information

Energy labels vary by country. The MRG **provides general labelling guidance** and example efficiency classes that countries can adapt to national markets.

The MRG covers **supplier/dealer obligations and key product information** for consumers, including energy performance and estimated energy consumption.

The MRG includes **intermediate and higher efficiency reference levels across 20 climate zones**, reflecting efficient products commercially available in the international market.

The MRG label examples use MEPS as the lower boundary and show how **higher classes can be set using either market-based or more aspirational levels**.

Grade	“Excellent” = best-performing models available on the global market	“Excellent” = aspirational performance levels in the future
Excellent	$8.30 \leq \text{CSPF}$	$10.00 \leq \text{CSPF}$
Very Good	$7.50 \leq \text{CSPF} < 8.30$	$8.60 \leq \text{CSPF} < 10.00$
Good	$6.80 \leq \text{CSPF} < 7.50$	$7.40 \leq \text{CSPF} < 8.60$
Fair	$6.10 \leq \text{CSPF} < 6.80$	$6.10 \leq \text{CSPF} < 7.40$
Low	$\text{CSPF} < 6.10$	$\text{CSPF} < 6.10$

# Efficiency Requirements Reflect Climate Conditions



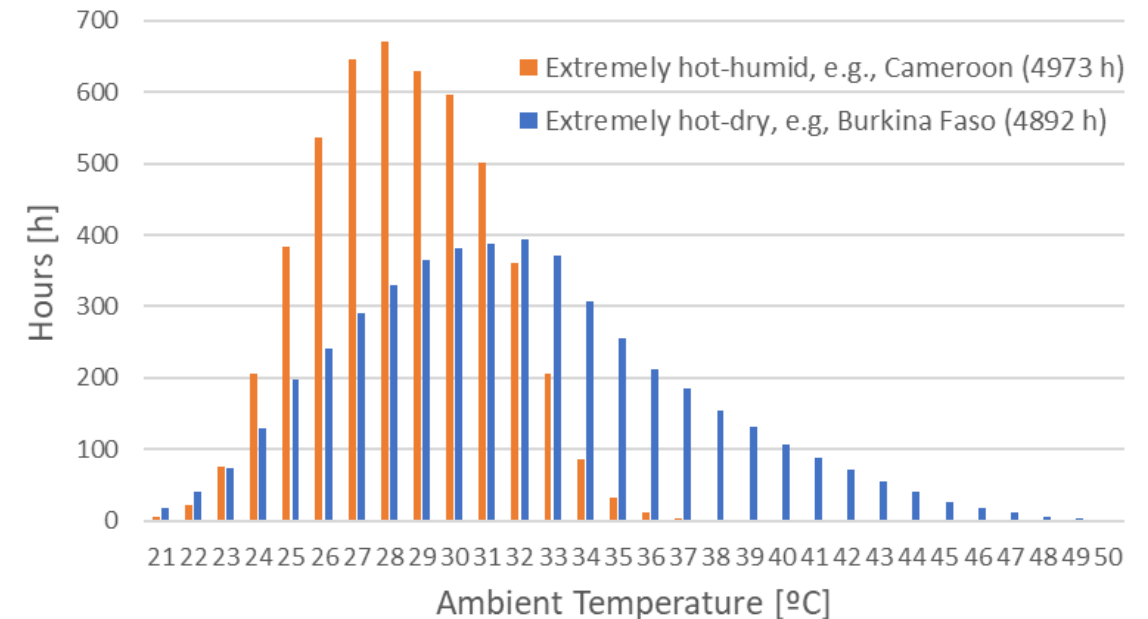
The MRG adapts cooling and heating efficiency requirements to different climate groups

Annual cooling bin hours by climate group			
Thermal band	Humid	Dry	Marine
Extremely hot	4,973	4,892	–
Very hot	3,630	3,915	–
Hot	1,951	2,609	–
Warm	1,038	1,178	568
Mixed	1,049	1,418	–
Cool	784	958	–
Cold	248	677	–
Very cold		379	
Subarctic / Arctic		274	
Group 1 (ISO)		1,817	
Group 2 (ISO Amd)		6,493	
Group 3		714	

Cooling MEPS for  $\leq 6$  kW: Group 1: 1,817 h  $\rightarrow$  CSPF 6.10  
 Group 2: 6,493 h  $\rightarrow$  CSPF 5.00

Climate-specific bin hours help countries select requirements that reflect local operating conditions. Countries may also define national bin-hour profiles using local climate data.

Outdoor temperature distribution affects performance



# Super-Efficient AC Annex: Supporting Advanced Programmes

The annex is **informative and voluntary**. It is intended to support endorsement labels, sustainable procurement and incentive-based programmes – not mandatory MEPS.

Based on **Global Cooling Efficiency Accelerator** (GCEA) specifications, **adapted by UNEP-U4E** for broader international use.

Applies to **ductless split air conditioners and reversible heat pumps up to 6 kW**, with possible expansion where sufficient data are available.

By **considering dehumidification performance**, the specification helps identify units that can maintain comfort more effectively under real operating conditions.

Test condition (% nominal capacity)	Maximum Sensible Heat Ratio (SHR)	Minimum EER
25%	65%	7.7
50%	80%	6.4
75%	90%	6.1
100%	92%	6.0



# Regional Perspectives: Using Evidence to Drive Policy

Nickson Bukachi Onger  
AFREC Energy Specialist

[www.unep.org](http://www.unep.org)



## Q & A session

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# Thank you

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