UN CLIMATE CHANGE CONFERENCE UK 2021
IN PARTNERSHIP WITH ITALY

HM Government

International Energy Agency

SEAD SUPER-EFFICIENT EQUIPMENT & APPLIANCE DEPLOYMENT
AN INITIATIVE OF THE CLEAN ENERGY MINISTERIAL

Raising Product Efficiency

I) SEAD Initiative
II) COP26 Product Efficiency Call to Action
III) Energy Performance Ladder

I) Super-efficient Equipment and Appliances Deployment (SEAD) Initiative

What is the SEAD Initiative?

The **Super-efficient Equipment and Appliance Deployment (SEAD) Initiative** is a voluntary collaboration between 21 member governments to **promote the manufacture, purchase and use of energy-efficient appliances, lighting and equipment worldwide.**

SEAD supports appliance energy efficiency policies and programmes in its member countries by:

Increasing partner participation and engagement	**Sharing experience between governments and partner organisations**	**Highlighting the benefits and urgency of product efficiency**	**Increasing awareness among manufacturers of market potential**

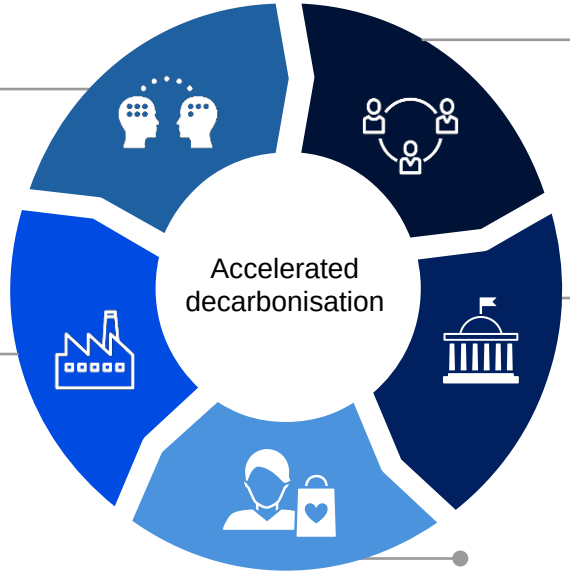
SEAD leadership

- Initially led by the US, SEAD was established in 2009 under the Clean Energy Ministerial
- Coordinated by the IEA since 2019
- Co-led by the UK, European Commission and India since 2016, with the addition of Sweden in 2021

Benefits of SEAD Initiative membership

Access to knowledge exchange and policy support
Opportunity to share and learn from 21 member Governments, including through webinars, masterclasses and other events

Manufacturers and industry
International market is simpler as countries coordinate product policy, bringing benefits for innovation and economies of scale



A framework for coordination
Domestic policy making becomes better-coordinated with regional and global partners

Governments
Enforcement is simpler and in-country oversight becomes easier, with possibility of reducing imports of low-efficiency products

Consumers
Demand is aggregated and costs come down for essential products and electricity bills reduce

SEAD Members and Partners

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II) COP26 Product Efficiency Call to Action

Doubling the energy efficiency of key products globally by 2030

An ambitious energy efficiency initiative

Ahead of COP26, SEAD is focusing on **four products that account for over 40% of global electricity consumption**

1) Industrial motor systems
2) Air conditioners
3) Refrigerators
4) Lighting




Doubling the energy efficiency of new products of these types sold across all SEAD member countries could

- Reduce electricity consumption by over **4,600 TWh per year by 2030** (equivalent to the generation of more than 2,100 coal-fired power plants)
- Avoid **1.9 Gt of CO_2** emissions per year by 2030
- Result in additional benefits for **air quality, jobs and health**

Call to Action — Objectives

As COP26 President, the UK wants to drive international action on product energy efficiency policy. Ahead of COP26, the UK and IEA have launched a **call to action** to strengthen the **Super-efficient Equipment and Appliance Deployment (SEAD) Initiative** to support countries in achieving raised ambition **more quickly, easily and at a lower cost**. The objectives of the call to action are to:

- **Set countries on a trajectory to double the efficiency of key products sold globally by 2030 –** industrial motor systems; residential lighting, ACs and refrigerators
- Support the delivery of crucial **national climate change targets**
- Provide consumers and businesses with more efficient products that are **affordable and cost-effective** to own and operate
- Stimulate **innovation** and provide businesses with **increased market and export opportunities**
- Promote a dual course of action, making products both **energy efficient and climate friendly** by reducing the use of refrigerants in cooling appliances

Support for the Call to Action

Twelve SEAD member countries have endorsed the Joint Statement in support of the Call to Action, and SEAD is actively seeking to expand its membership.

The G7 supported the goals of the Call to Action in the July 2021 G7 communiqué.

III) Energy Performance Ladder

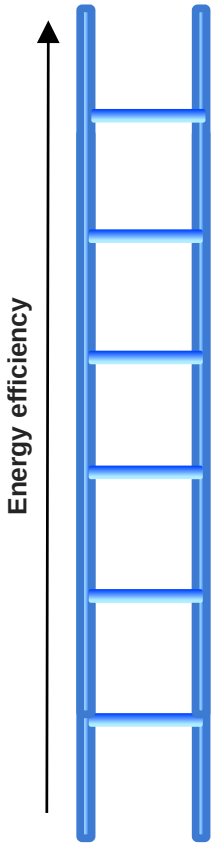
A common framework for improving appliance energy efficiency

Energy performance ladder

The **energy performance ladder** brings together multiple policies under a single consistent set of performance thresholds, ranging from minimum energy performance standards (MEPS) that remove the least efficient products from the market to high energy performance standards (HEPS) that promote the sale of the highest-performing products.

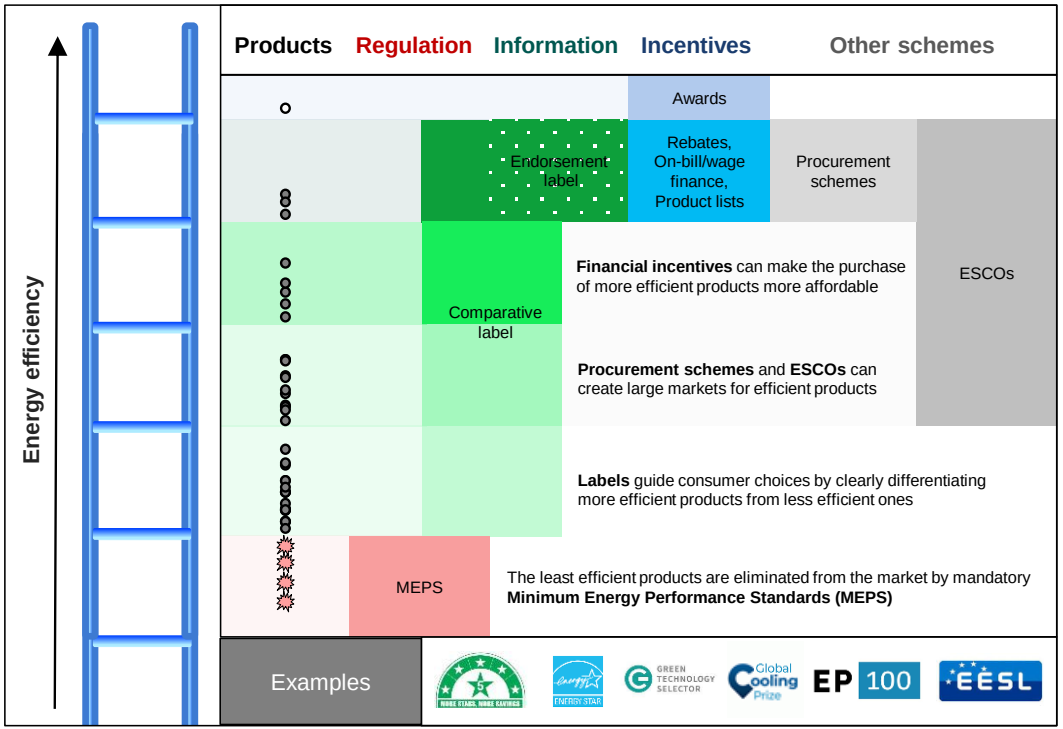
The ladder then provides a framework that can:

- **Show a clear trajectory for improving** appliance energy performance over time, by defining how policy will move up the ladder in future
- **Benchmark energy performance across markets**, while allowing policy to be set that is suited local market conditions
- **Aggregate markets** to reduce operational costs and increase the customer base of high-performance products



A single framework for a range of policies

A range of policies can improve the efficiency of electrical appliances, lighting and motors sold in a market.

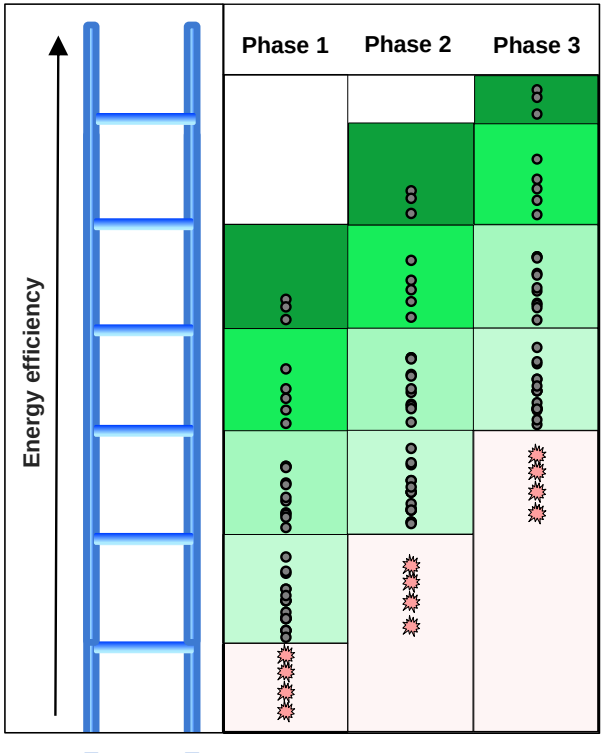


Ladder 'steps' are defined as energy performance levels, and thresholds for different types of policy can then be set at steps:

- **Regulation:** Mandatory **Minimum energy performance standards (MEPS)** eliminate the least efficient products from the market
- **Information: Energy performance labelling** allows consumers to make more informed purchasing decisions, given information about a product's energy use and operating costs
- **Incentives: High energy performance standards (HEPS)** promote the sale of the highest-performing products using financial incentives (such as obligation programmes and rebates) and technology product lists
- **R&D policy** can help drive innovation in the longer term

Moving up the energy performance ladder

The ladder framework can show a clear trajectory for improving appliance energy performance over time.



Pre-defined step changes indicate how policy will move up the ladder in future. For example, a country with MEPS and a comparative labelling scheme with four categories can evolve over time so that:

- The MEPS level set during Phase 2 would be at the level of the 2-Star label under Phase 1, the 2-Star label during Phase 2 would be at the level of the 3-Star label under Phase 1, etc.
- Another round of rescaling would shift the MEPS level under Phase 3 to the level of the 2-Star label during Phase 2 and the 2-Star label during Phase 3 to the level of the 3-Star label during Phase 2, etc.

Comparative label category (1/2/3/4-Star)

Product available on the market

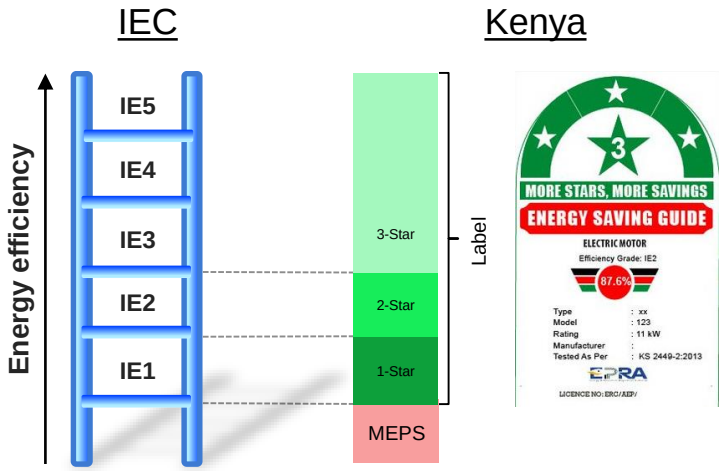
Product no longer available due to MEPS

Defining the ladder

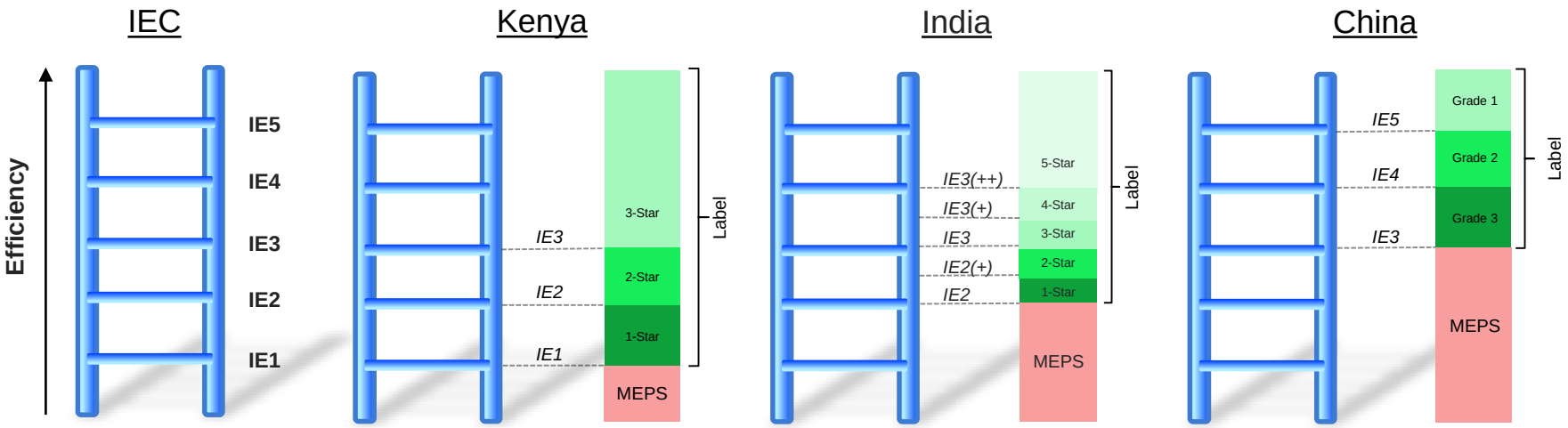
Key steps for developing an energy performance ladder, aligning each where possible:

1. Agree testing procedures to measure efficiency
2. Define efficiency thresholds (ladder steps)
3. Map existing requirements by collecting data on the efficiency of stock within the market
4. Set the target steps and timeframe to climb the ladder

Motors example:



Industrial motors – All countries employ the same ladder



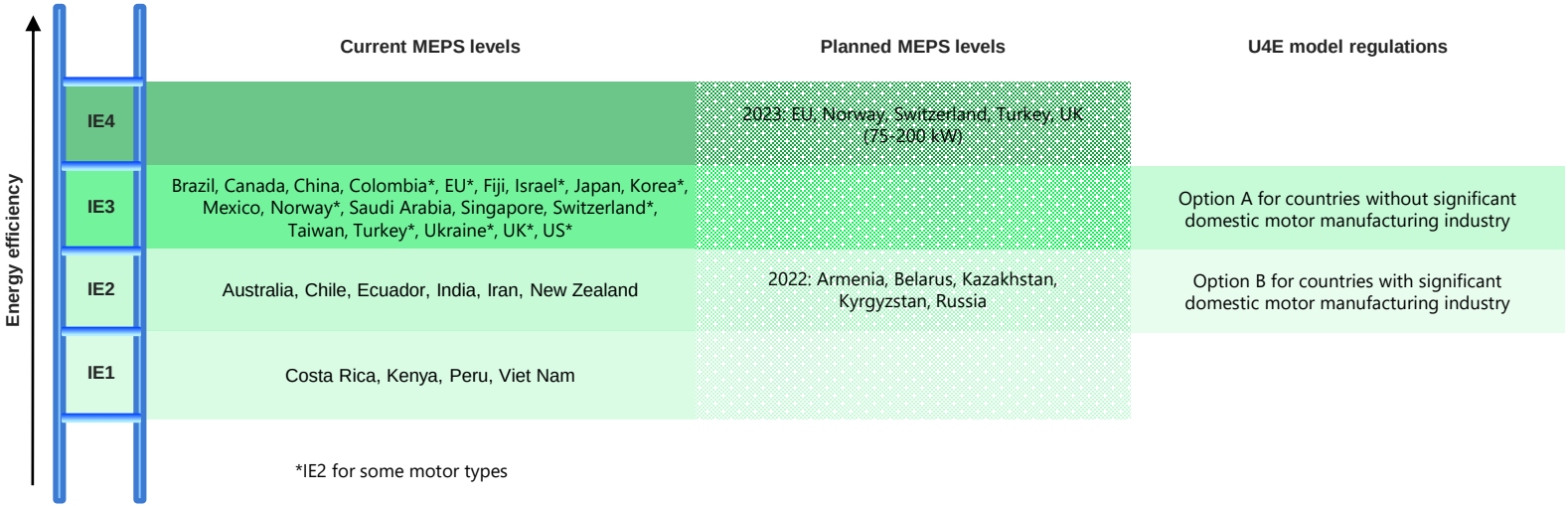
Many countries already use the same ladder for their policy thresholds.

MEPS for industrial motors consistently rely on the IEC Energy Efficiency classes. Kenya, India and China use different levels for MEPS (IE1, IE2 and IE3 respectively). These countries also use steps on the same ladder for their comparative labels.

Other countries use higher steps for incentive programmes.

Industrial motors – Current and future MEPS levels

Mandatory MEPS for new motors

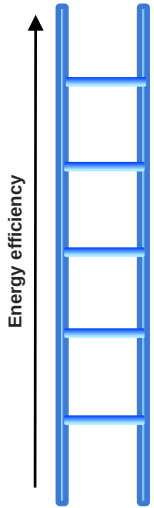


Nearly 60 countries currently have mandatory industrial motors MEPS, 45 of these at IE3 level.

European Economic Area countries and the UK are transitioning to IE4 levels in 2023 for motors in the 75-200 kW range.

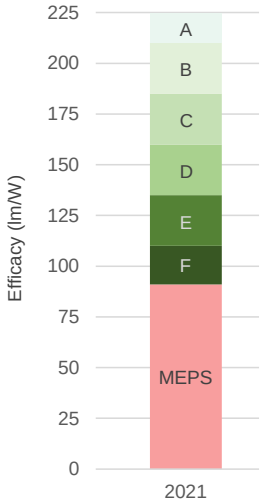
Additional energy savings will be available through early replacement of motors, improved control and system optimisation.

Residential lighting – Energy performance ladder



GSL (non-directional, LED) policies
(India)

GSL (technology-neutral) policies
(EU)

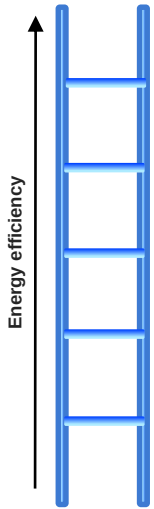


Countries and regions can set different future levels, implementing them at different times.

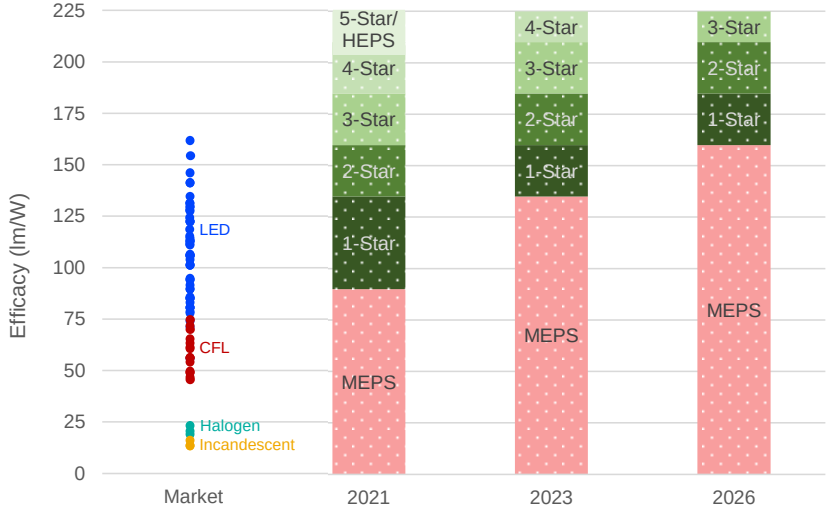
Ideally ladder steps for general service lamps (GSL) are technology-neutral, though efficacy specification can be linked to technology.

Lighting efficiency (efficacy) is measured using different IEC/CIE procedures for different lighting technology (e.g. LED, halogen).

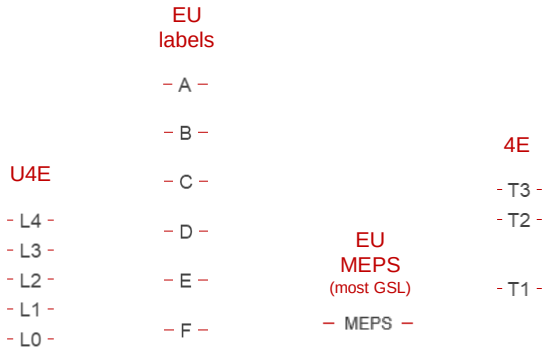
Residential lighting – Energy performance ladder



GSL current market & proposed future policies
(Example country)



Reference levels



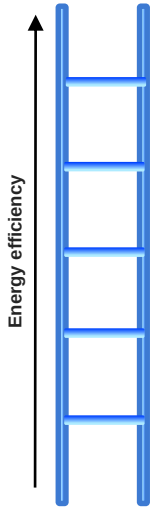
Future levels could be aligned with United for Efficiency's (U4E) Model Regulations, the IEA 4E SSL Annex Performance Tiers and policy thresholds in major markets such as the EU.

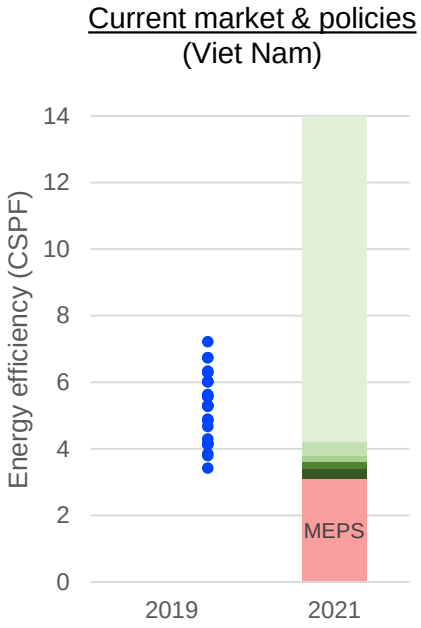
By setting ambitious levels up to 2030 and beyond, governments can provide long-term clarity to manufacturers.

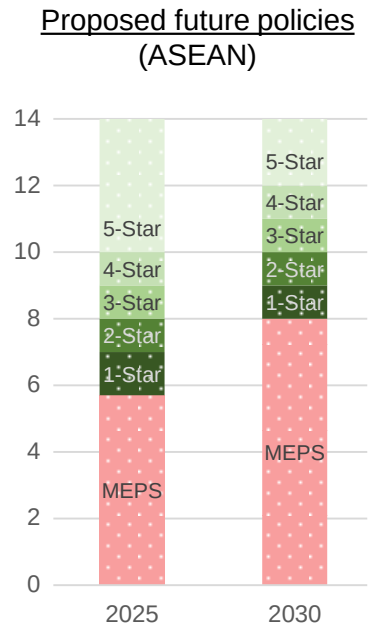
High energy performance standards (HEPS) that promote the sale of the highest-performing products using financial incentives and technology product lists can be aligned with label categories for the most efficient products.

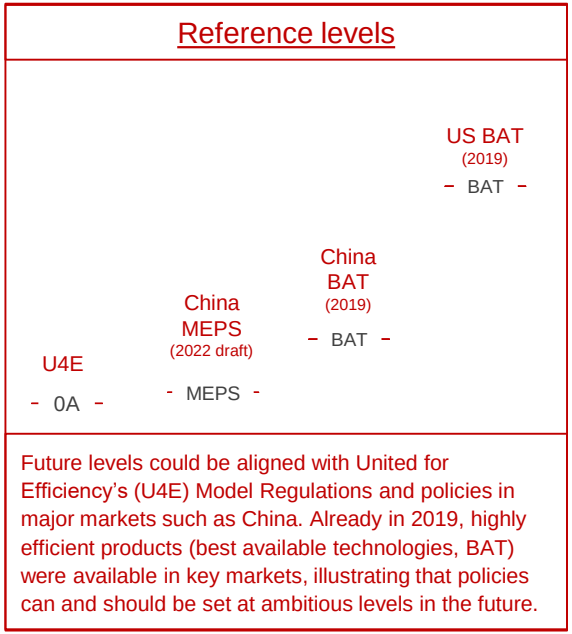
Beyond efficacy, additional criteria may be added to performance requirements, such as lifetime, colour rendering or mercury content.

Residential ACs – Energy performance ladder







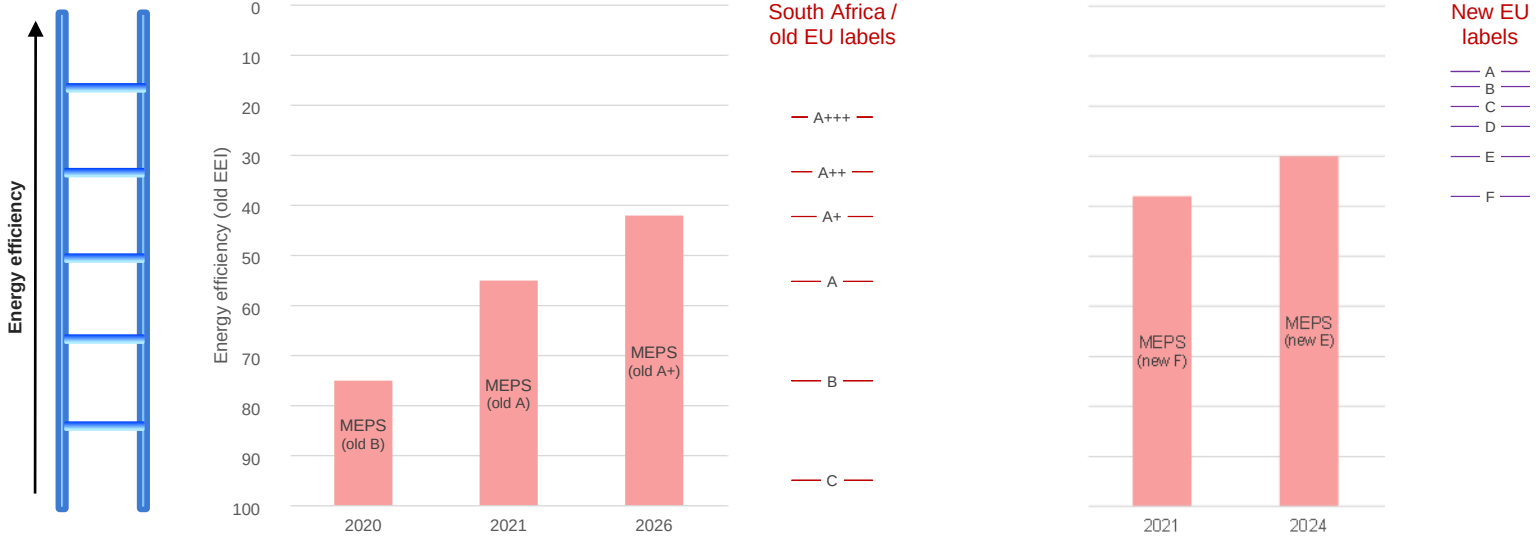


Countries and regions can set different future levels (based on their own metrics), implementing them at different times.

AC testing metrics are converging, though differences remain. Beyond efficiency, additional criteria may be added to performance requirements, such as low GWP refrigerants or bans of specific technologies.

Note: 2025 and 2030 MEPS and label levels for ASEAN are indicative. All levels shown are for cooling capacities < 4.5 kW.

Residential refrigerators – Energy performance ladder



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By setting ambitious levels up to 2030 and beyond, governments can provide long-term clarity to manufacturers.

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