International Energy Agency

Energy Efficiency in an Economic Recovery

Mel Slade

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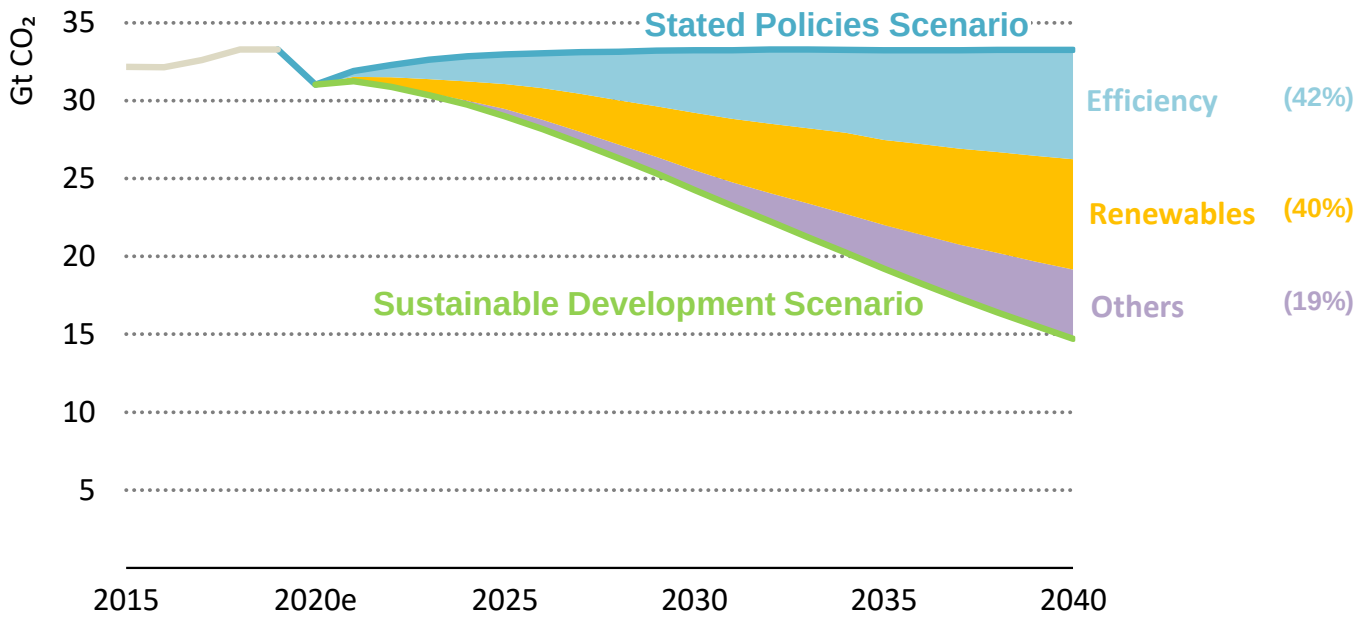
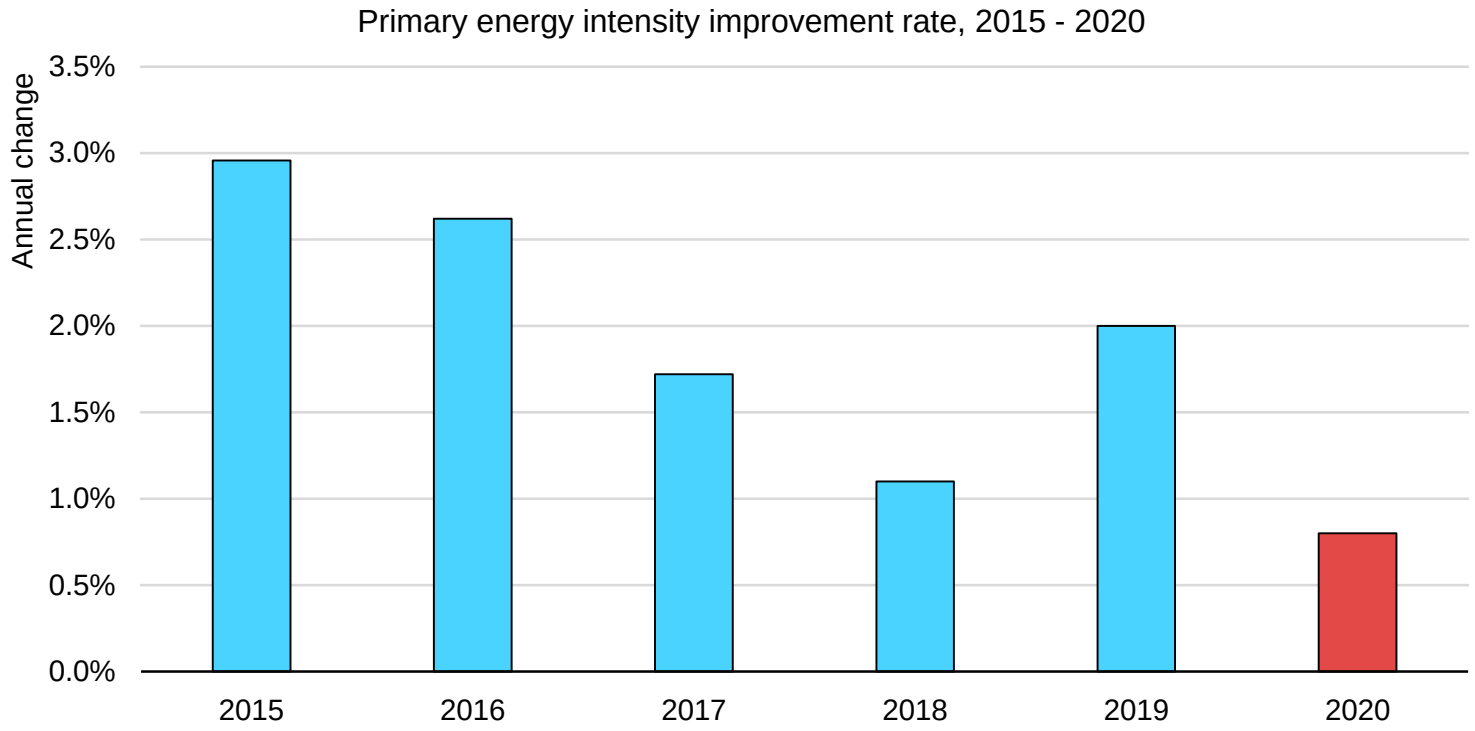
Energy efficiency is critical to achieving global climate goals

CO2 emissions reductions in the Sustainable Development Scenario relative to the Stated Policies Scenario



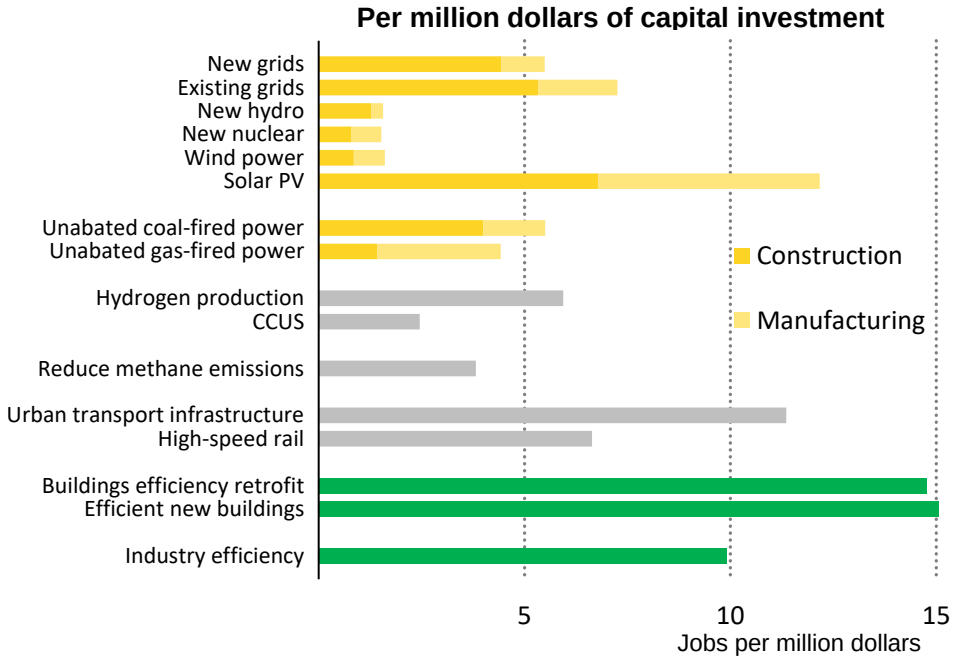
Energy efficiency is expected to contribute over 40% of energy sector GHG abatement up to 2040. A slowdown in energy efficiency today lessens the chance of meeting long-term climate goals.

Efficiency progress, already weakened, faces setbacks from the pandemic



The Covid-19 crisis has shocked both economic activity and energy demand. Primary energy intensity progress halved in 2020.

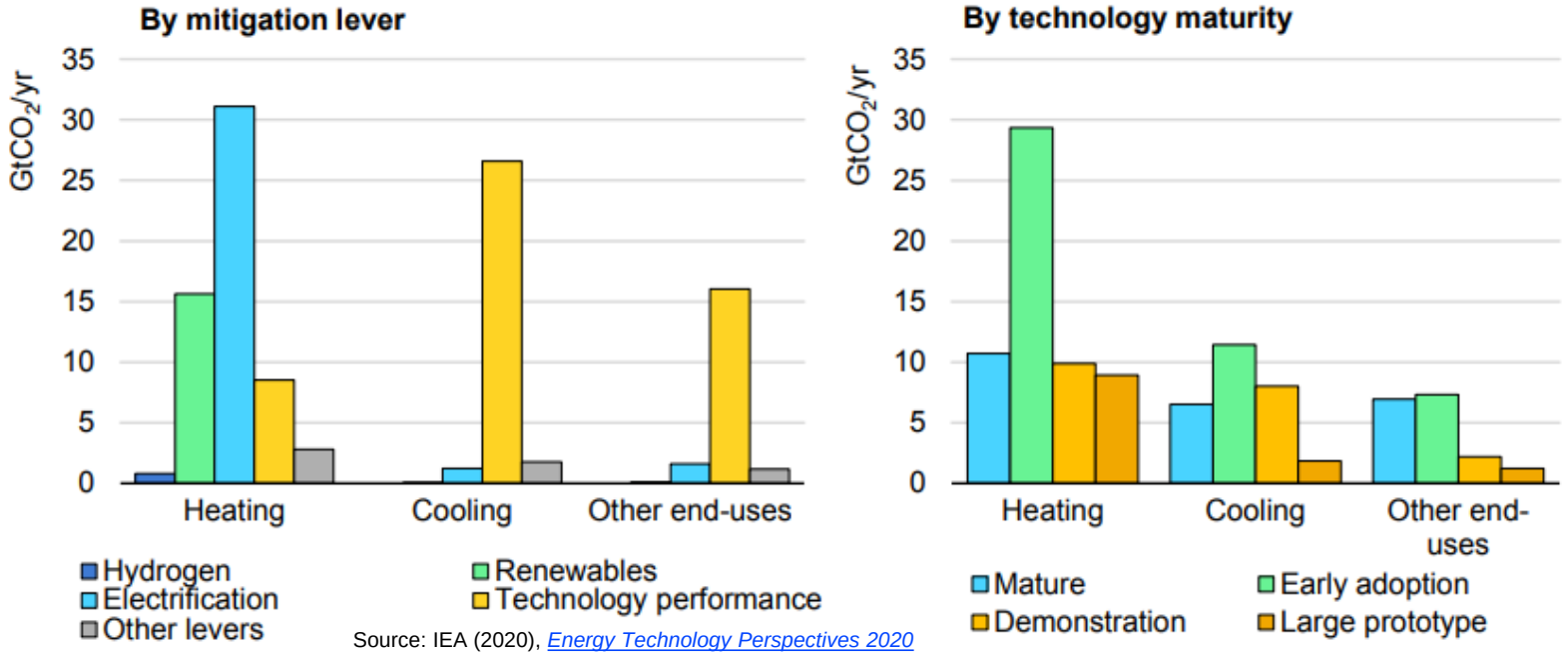
Energy efficiency - job creation at the heart of sustainable recovery



The IEA Sustainable Recovery Plan envisions average annual investments of USD 1 trillion for the next three years. Energy efficiency related investments are the largest category of spending and creates most jobs per unit of investment

Most of the technologies to drive CO2 reductions in buildings exist

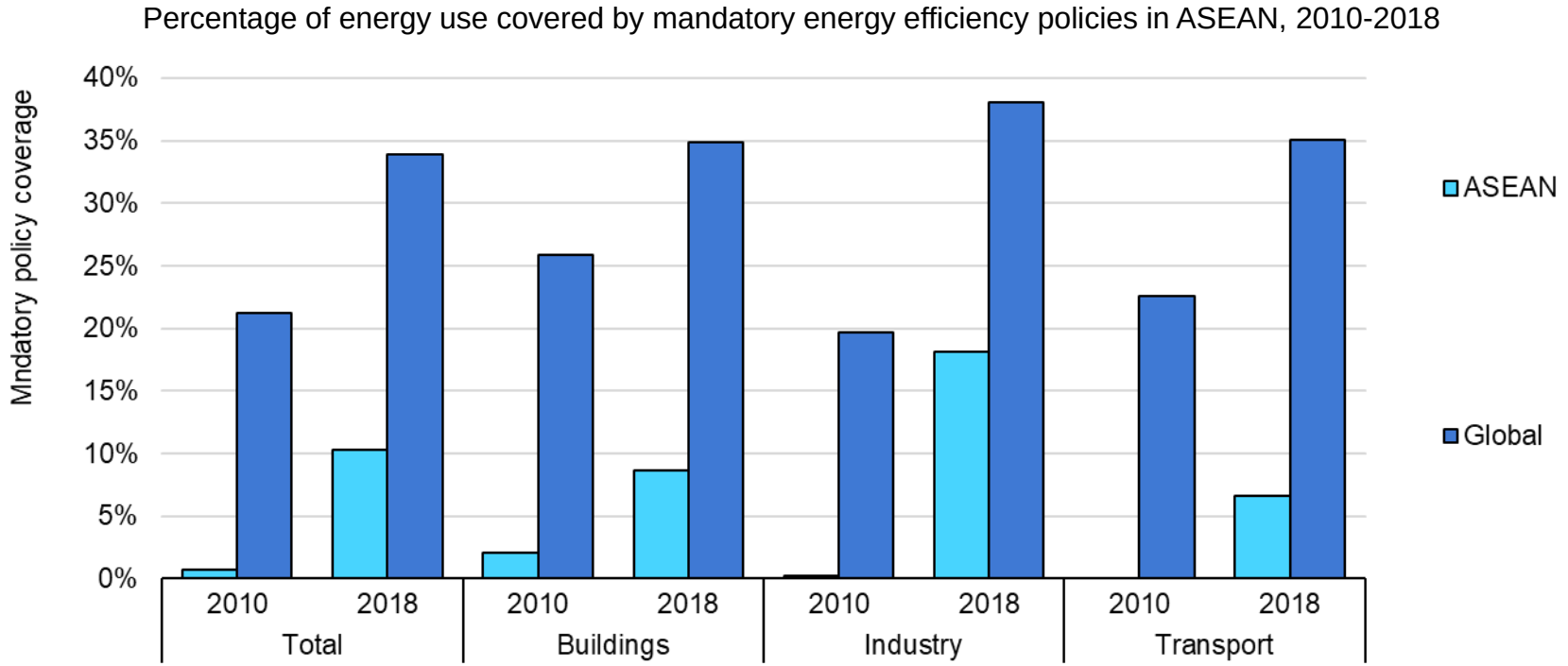
Global cumulative CO2 emissions reductions in the buildings sector by mitigation lever and technology readiness level in the Sustainable Development Scenario relative to the Stated Policies Scenario, 2020-70



Source: IEA (2020), *Energy Technology Perspectives 2020*

Three-quarters of what is needed to decarbonise the buildings sector could be achieved through the use of mature and early adoption of technologies: further innovation would bring additional gains.

How does policy help promote energy efficiency?



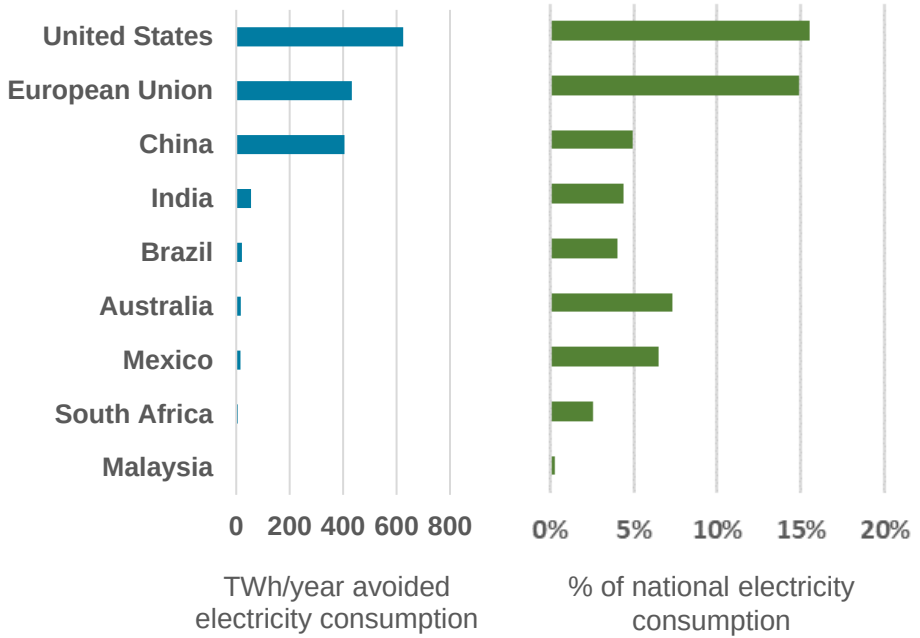
Based on EPPI 2019 analysis for IEA (2019), Energy Efficiency 2019, https://www.iea.org/reports/energy-efficiency-2019

Around 10% of ASEAN's total energy use in 2018 was subject to mandatory energy efficiency policies.
The percentage of energy use covered by mandatory energy efficiency policies directly impacts the energy savings.

Appliance efficiency policy achievements

- The longest running appliance efficiency programmes with the largest product coverage have saved around 15% of their country's total electricity consumption.
- In 2019, annual global electricity demand was reduced by at least 1 600 TWh, equivalent to the total production of wind and solar energy in the top 10 producer countries.
- If all countries worldwide had adopted similar measures, global savings of 3 600 TWh could have been realised in 2019. This is equivalent to cutting China's total electricity consumption in half.
- S&L programmes carry on delivering over decades as new more efficient products are continually entering the market and older products are replaced, so that the total savings grow year on year.
  - For example, the impact of current appliance efficiency programmes in the EU is forecast to increase to nearly 25% by 2030 from about 15% of total EU electricity consumption in 2020.

S&L programme-related reduction in electricity consumption



Source: IEA-4E 2021 EESL Assessment Report

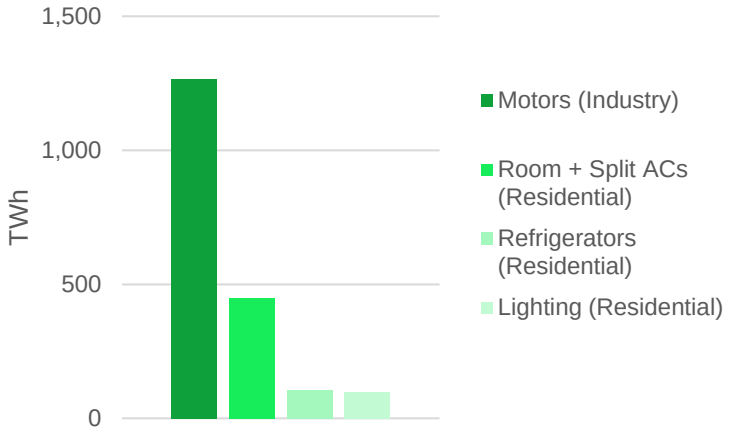
SEAD and the COP26 Product Efficiency Call to Action — Objectives

As COP Presidents, 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 –** electric motors, air conditioners, refrigerators, lighting
- 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 **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

Savings potential from product efficiency worldwide

Electricity consumption savings potential (TWh) in 2030 globally by product



Savings potential is equivalent to:

More than USD 230 billion in bill savings in 2030

640 avoided coal-fired power plants in 2030

Electricity savings in 2030 equivalent to the current consumption of India, France and Mexico combined

Assumptions: Motors savings potentials are based on differences between the Stated Policies Scenario (STEPS) and the Sustainable Development Scenario (SDS), savings for the other products are based on a separate model with aligned scenarios. Consumer bill savings are based on current electricity prices in countries where savings accrue. The average coal-fired power plant is assumed to generate 3 TWh per year.

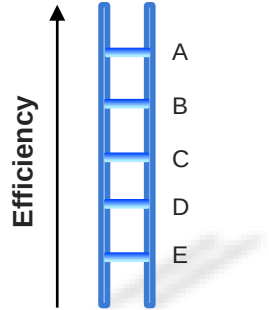
Source: IEA – Provisional estimates subject to change

Huge energy savings potential from product efficiency, especially industrial motors

Performance ladder as a basis to set energy efficiency levels

Ladder steps can be used to define performance requirements, e.g. for:

- Minimum energy performance standards (MEPS)
- Label thresholds for both categorical labels and endorsement labels
- Requirements for rebates (such as obligation programmes)
- Requirements to appear on energy technology lists in general
- Future aspirational targets



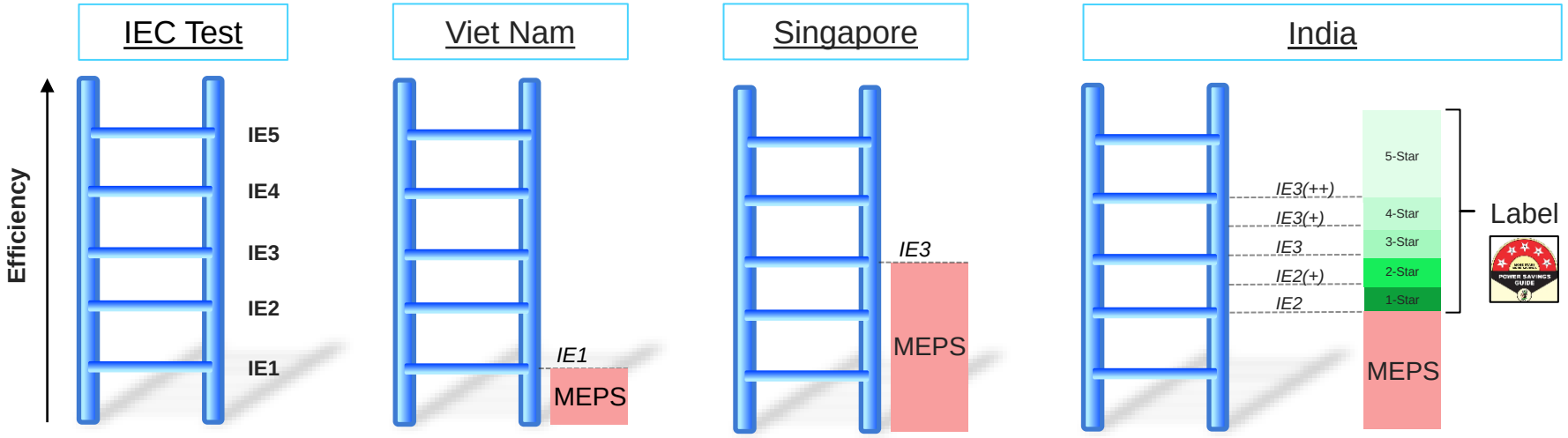
Ideally, steps are used by different policy tools in a coordinated way, and revised over time.

Key steps for developing an energy efficiency ladder:

1. Agree on testing procedures to measure energy efficiency
2. Define efficiency thresholds (tiers or steps on the ladder), plus other requirements
3. Map existing requirements
4. Set the target steps to climb the ladder

Align where possible

Example: Motors – All countries employ the same ladder

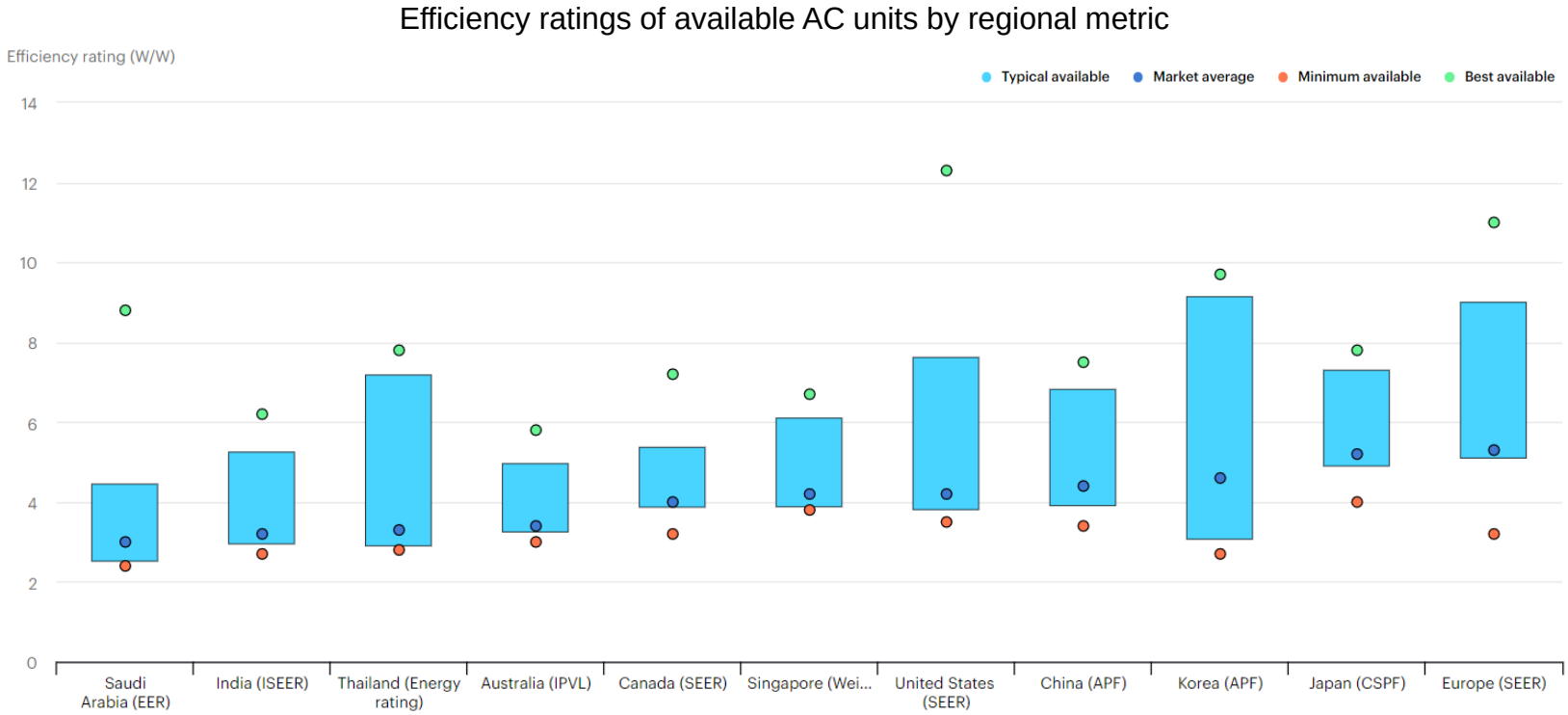


All countries can use the same ladder for their policy thresholds.

Viet Nam (IE1) and Singapore (IE3) use different levels for Minimum Energy Performance Standards (MEPS).

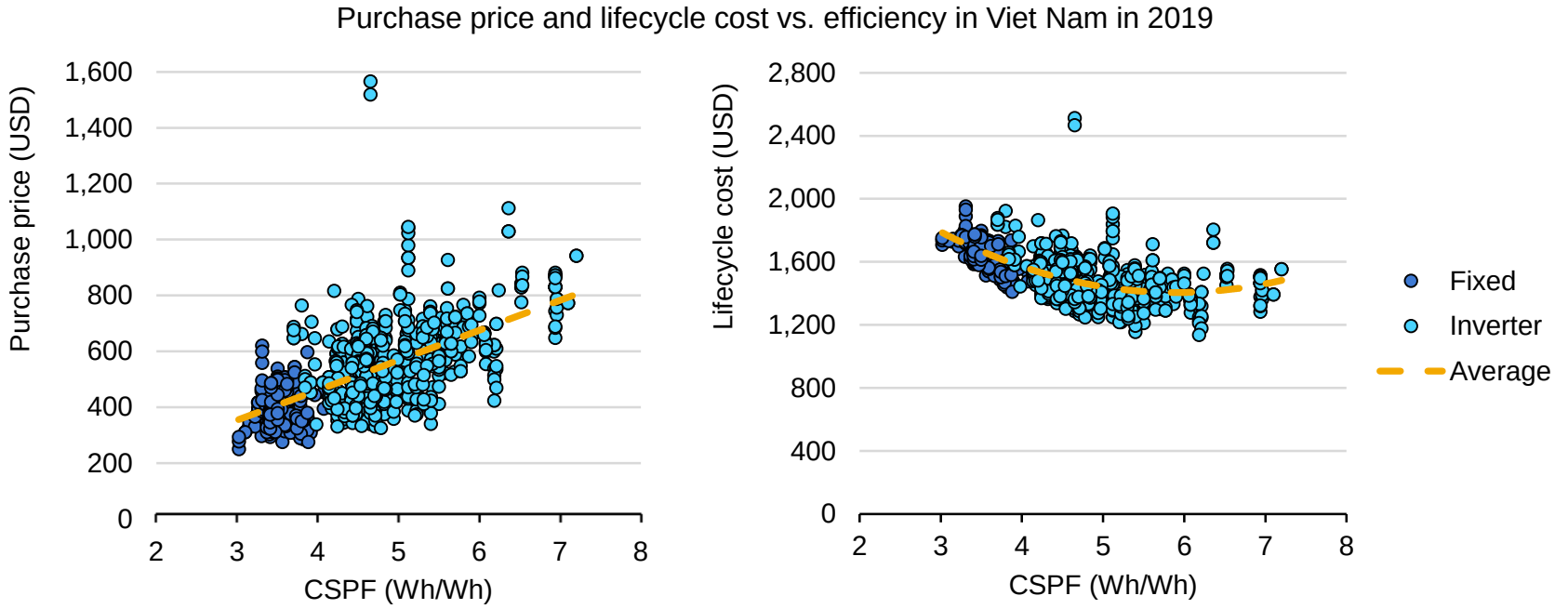
Whilst, India currently uses half (IE) tiers for its 5-star energy labelling of new electric motors.

Proposal: Doubling of efficiency is possible with existing ACs



Significantly more efficient AC equipment already exist on all markets.
Different metrics are used, which makes exact comparison across countries difficult.

Example: Residential ACs – Current market in Viet Nam

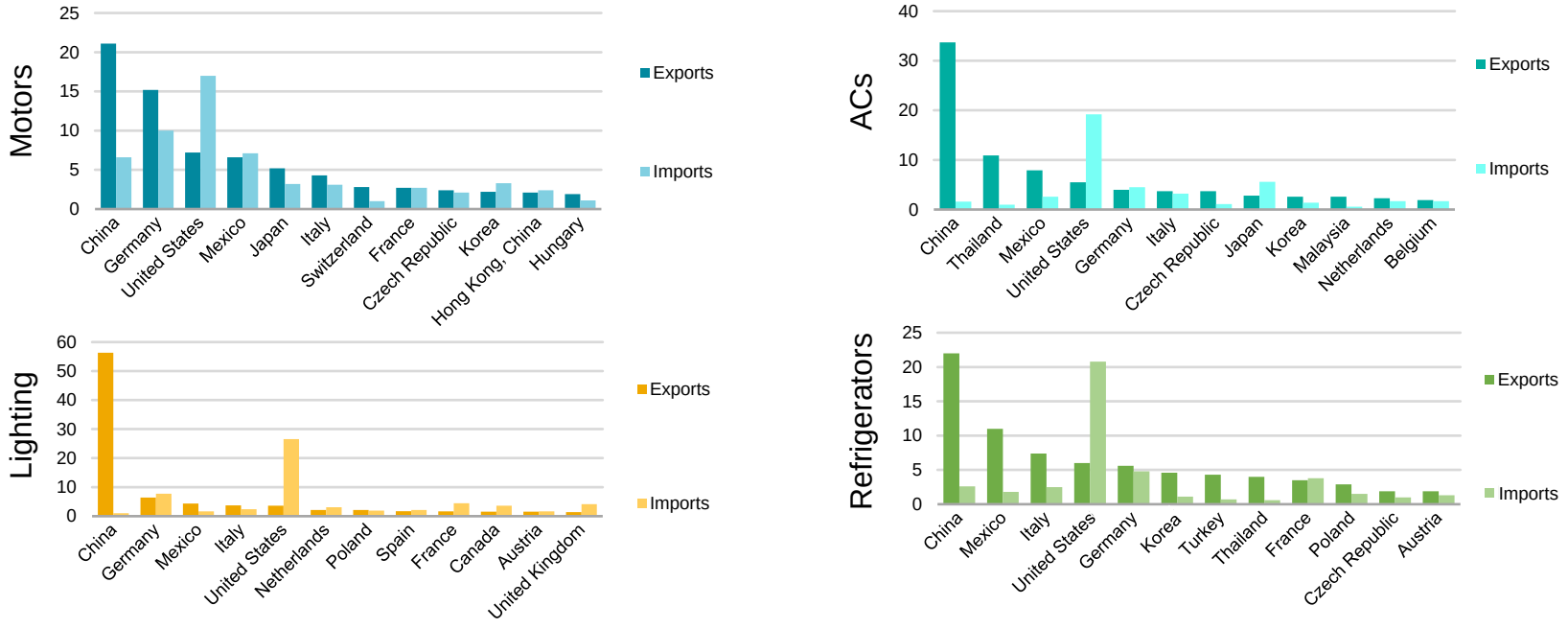


Notes: ACs normalised to electricity consumption of 1,000 kWh/year and cooling capacity of 12,000 BTU/hr. Source: Based on IEA (2019). The Future of cooling in Southeast Asia.

Energy-efficient appliances often tend to be cheaper across their lifetime.
However, evidence from Viet Nam shows that some energy-efficient appliances can be cheaper on purchase price alone, with several efficient models on the market that are well below the average purchase price.

Major trading countries of the 4 key products

Major trading countries in terms of value, 2018 (Share in world trade value, %)



Sources: UN COMTRADE and International Trade Center statistics

Priorities to reap the benefits of energy efficiency for ASEAN's Economy

- Industry – develop incentive programmes and new business models to encourage energy efficiency improvements, develop real-time energy management systems based on low cost sensor and telecom technologies.
- Transport – develop an EV roadmap, particularly for two and three wheelers.
- Buildings – accelerate the roll out of buildings codes and mandatory disclosure of building performance, develop grid connected smart buildings as a flexible resource for the energy system.
- Appliances – collaborate internationally to adopt ambitious performance standards to the benefit of ASEAN manufacturers and consumers, develop demand response ready appliances.

Information please…

- ASEAN roadmaps for buildings and construction and cooling
- Energy efficiency policies and measures
- Examples of new business models using digital technologies