Overview of IEA E4 cooling programmes in Asia

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6th IEA-Tsinghua joint workshop - 28th September 2020
IEA Energy Efficiency in Emerging Economies (E4) programme

Since 2014, the IEA has been supporting Brazil, the People’s Republic of China (China), India, Indonesia, Mexico and South Africa to capture the benefits of energy efficiency through the E4 programme. E4 also works regionally with ASEAN, Latin America and increasingly Africa, supporting energy efficiency through established political and trading relationships.

Objective: support the design and implementation of more effective energy efficiency policies that help meet national and regional objectives for economic and social development.

Collaboration is based on national and regional needs but falls into three main themes:
- understanding the potential for energy efficiency to enable a secure, sustainable energy supply
- supporting target setting and policy design to deliver energy efficient prosperity
- tracking progress through energy efficiency indicators and policy evaluation for continuous improvement.

E4 countries consume around one third of the world’s energy and this proportion is set to grow
By 2050, around 2/3 of the world’s households could have an air conditioner. China, India and Indonesia will account for half of all AC units in buildings in 2050.
E4’s work on cooling in China

The **Future of Cooling in China**, developed as one of the implementation strategies for China’s Cooling Action Plan, was launched in June 2019.

2\(^{\text{nd}}\) **Workshop on Cooling** with Tsinghua Univ. held in China in Sep 2019.


An analysis on **retrofit of cooling system** planned for early 2021.
E4’s work on cooling in ASEAN

The ASEAN-IEA Cooling Partnership was formed as part of Thailand’s 2019 ASEAN Presidency, culminating in The Future of Cooling in Southeast Asia report.

The IEA also organised various cooling events within the region including a side event at the Asia Clean Energy Forum in July 2019.

Continuing to expand analysis on cooling in the region and recently completed a retail market survey for ACs and refrigerators using crowd-sourced data.

Present findings through webinars and Singapore International Energy Week 2020.
ASEAN highlights: ACs – Retail price and lifecycle cost vs. efficiency

Despite higher retail prices, more efficiency ACs can have lower lifecycle costs thanks to lower energy running costs.

Notes: ACs normalised to electricity consumption of 1,000 kWh/year and cooling capacity of 12,000 BTU/hr.

More efficient ACs are available in the Southeast Asian market and they do not have to be more expensive or imported.
E4’s work on cooling in India

A joint **IEA-BEE International Workshop on Energy Efficient Cooling** in December 2019 under Super-efficient Equipment and Appliance Deployment (SEAD) initiative.

150 representatives from governments, utilities and manufacturers, as well as leading international and domestic experts, to discuss how to accelerate energy efficient cooling.

As a follow-up, IEA published an article for the **Energy Manager Magazine** special edition on cooling in March 2020.

Upcoming study on **the impact of cooling on peak electricity demand**.
Super-efficient Equipment and Appliance Deployment (SEAD)

- Founded in 2009 under Clean Energy Ministerial (CEM)
- In 2016, the UK, EC and India took co-leads
- COP26 Product Efficiency Initiative
- In 2019, IEA responsible for operating duties
- Online webinars: **Stimulating Innovation towards High-Efficiency Cooling Solutions & Cooling as a Service**

Energy-related CO₂ emissions and reductions by source

- Electric motors efficiency
- Building efficiency, incl. lighting and refrigeration
- Air conditioners efficiency

Industrial electric motors, along with residential lighting, cooling and refrigeration are responsible for more than a third of current global electricity consumption.

UNEP Emissions Gap Report (2017) notes that efficient appliances is one of the six areas with highest potential of closing emissions gap to Paris.

Therefore, improving energy efficiency for these products is a key source of emissions reductions to achieve the Paris targets.
China accounts for more than 40% of the current global electricity consumption for residential air conditioners.
China and US account for more than a third of the current global electricity consumption for refrigerators.
Energy Efficiency Ladder Framework

Ladder steps can be used to define performance requirements

- 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.

The key steps for developing an energy efficiency ladder

- Agree on testing procedures to measure energy efficiency
- Define efficiency thresholds (tiers or steps on the ladder)
- Map existing requirements
- Set the target steps to climb the ladder

Performance ladder as a basis to set energy efficiency criteria
Example: Refrigerators – Setting future requirements

Countries and regions can set different future levels, implementing them at different times.
• Next steps
• Thank you