

Mapping & Benchmarking of Split and Unitary¹ Air Conditioners



The IEA's 4E Mapping and Benchmarking Annex provides policy makers with evidence based comparisons of the performance of products sold in various national markets. This allows benchmarking of the success of national policies in managing product energy consumption and efficiency and enables identification of opportunities to further encourage the uptake of energy efficient products.

This briefing describes the outcomes of the international comparison of split and unitary (or packaged) domestic air conditioners with under 14 kW cooling capacity. The analysis includes information drawn from Australia, Canada, China, EU, Republic of Korea, and USA.

Observations for Policy Makers

- **Globally, the average efficiency of unitary products** has hardly changed over time, whereas split products, which account for around two thirds of global residential sales, have improved consistently at around 3% per year since 2000.
- **Across the countries analysed, the average efficiency (EER - Energy Efficiency Ratio)** was 3.0 for unitary products and 3.3 for split products. However, products are now available with a near-optimal efficiency of over 6.
- **The ratio of 'best product' to 'average product' efficiency** in each market implies that split products have the most scope for improvement.
- **The efficiency of split air conditioners in the Republic of Korea** is approximately 20% better than in other countries. This appears to be driven by the Minimum Energy Performance Standards (MEPS) introduced in 2004.
- **During 2010 MEPS were tightened in China and Australia**, with levels for unitary products in China becoming the most stringent of the countries reviewed.
- **Sales data suggest that in Australia and the EU** more efficient products out-sell others, which may reflect the influence of the energy labelling programmes in those regions on consumer preferences.

¹ Split products: single room unit and single condenser linked by pipe-work, but NOT ducts. Unitary products: 'packaged' in single mounting, including double duct units.

More Information

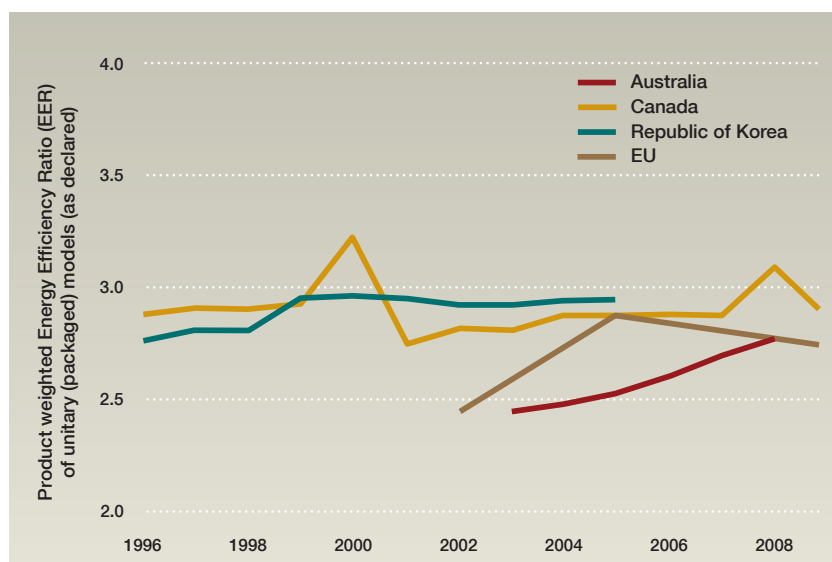
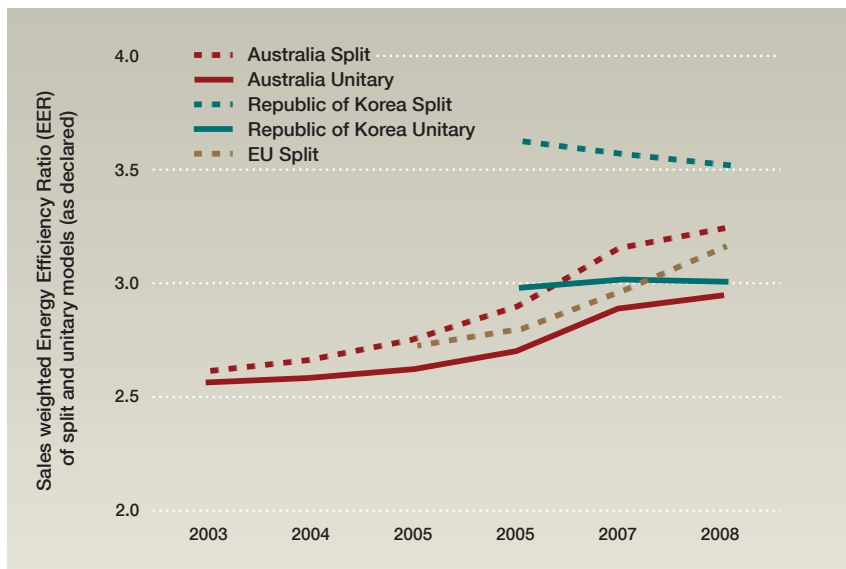
All publicly available Annex mapping and benchmarking outputs are available on the Annex website at <http://mappingandbenchmarking.iea-4e.org>.

For further information email: contact@mapping.iea-4e.org

Key Findings

Energy Efficiency

The efficiency of air conditioners in the Republic of Korea is substantially better than in the other countries analysed. This is particularly true for split models where the average efficiency is 20% higher than in other markets. In Australia and the EU, unitary and split products are improving in efficiency at up to 10% every two years, reducing the gap in efficiency compared to products in Korea.

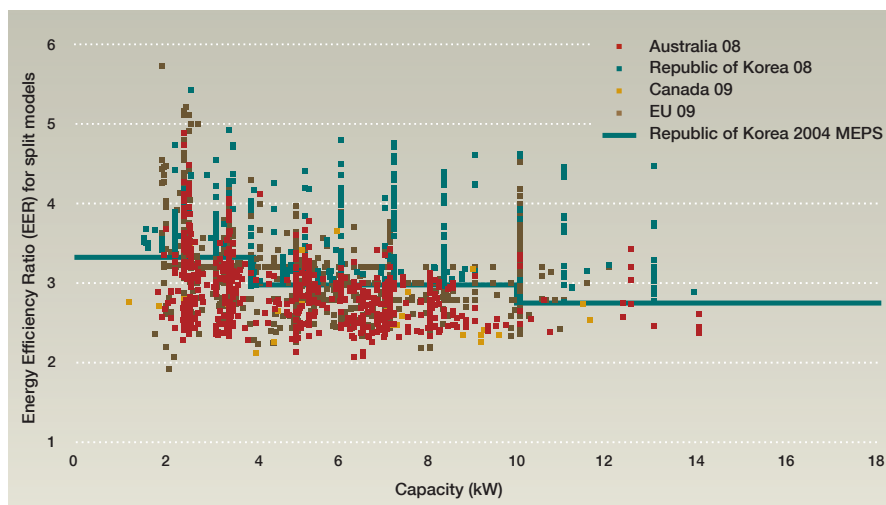


Purchasing Choices

Product weighted efficiency data implies that the average energy efficiency of unitary products has improved by less than 2% per year since 1996. The higher sales weighted improvement in efficiency in Australia and the EU is caused by consumers selecting the more efficient products that are available. This may indicate that the energy labelling programmes in those regions are being effective in influencing consumer preferences.

Scope for Improvement

The efficiency of air conditioners in the Republic of Korea suggests that stringent regulations implemented and updated over many years can significantly improve product performance in a market. The average split air conditioner in the other countries analysed would use 17% less energy if they matched the current average efficiencies of products in Korea. However, even in the Republic of Korea, the efficiency of the best performing split products is almost double that of the average product, suggesting significant further room for improvement.



This policy brief is based on a full report published in February 2011. Data quality varies between countries and graphs. See full report for details. The IEA Implementing Agreement on Efficient Electrical End Use Equipment has made its best endeavours to ensure the accuracy and reliability of the data used herein, however makes no warranties as to the accuracy of data herein nor accepts any liability for any action taken or decision made based on the contents of this report.