

# Energy Security

## Why is energy efficiency important for energy security?

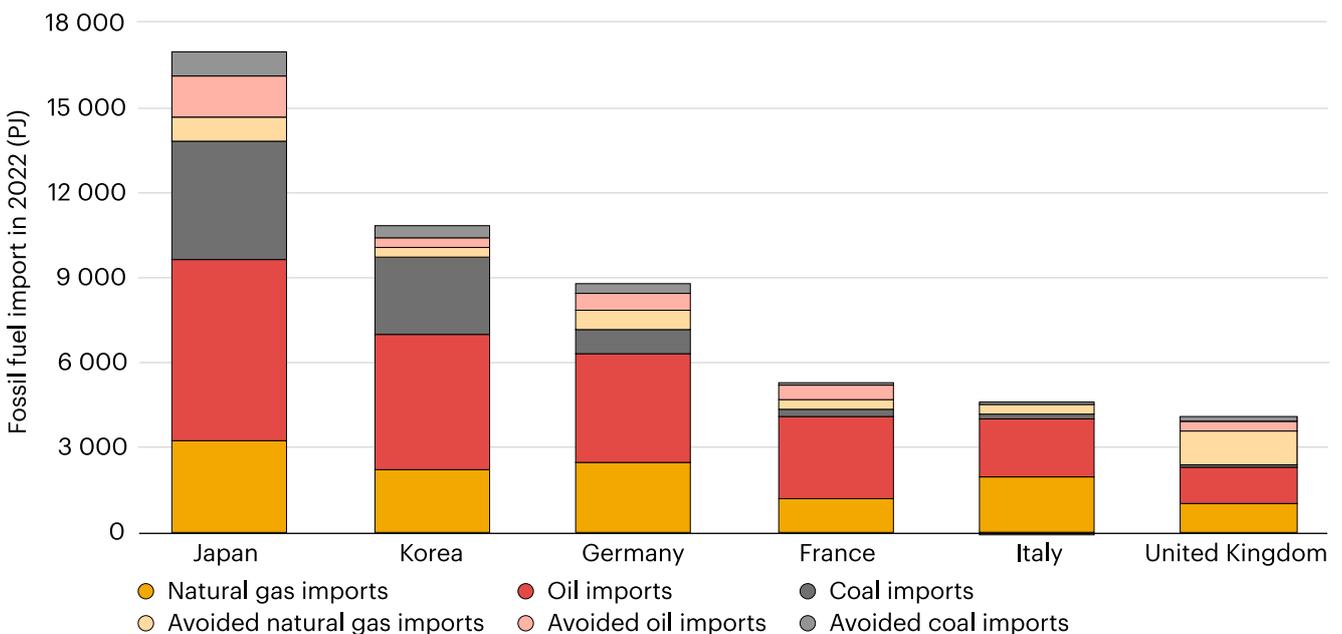
Energy efficiency can help **mitigate energy security risks** by reducing the reliance on fossil fuel imports, improving grid reliability, and acting as a buffer to supply shocks.

- Efficiency gains from the last two decades **avoided the need for 20% more fossil fuel imports** in IEA countries.
- Energy efficiency and demand response can support grid reliability by reducing peak demand. For instance, more efficient air conditioners in India could lower the impact of heatwaves on peak demand **by 20% by 2030** and help reduce the risk of blackouts.

## Key analysis

Energy efficiency policies in different sectors have been effective in reducing fossil fuel imports. In the European Union, the strongest reduction was in gas imports, driven by strong energy efficiency improvements in the industrial sector. Meanwhile, in Japan the strongest reductions were in oil imports, due to some of the most stringent fuel economy standards both for [passenger](#) and [commercial vehicles](#).

### Net fossil fuel imports and avoided imports since 2000 due to energy efficiency improvements in selected IEA countries



Notes  
PJ = petajoule.

Source  
IEA (2025) [Energy Prices](#), (accessed on 20 March 2025);  
IEA (2025) [Energy End-uses and Efficiency Indicators](#), (accessed on 20 March 2025).

## A closer look at electricity security

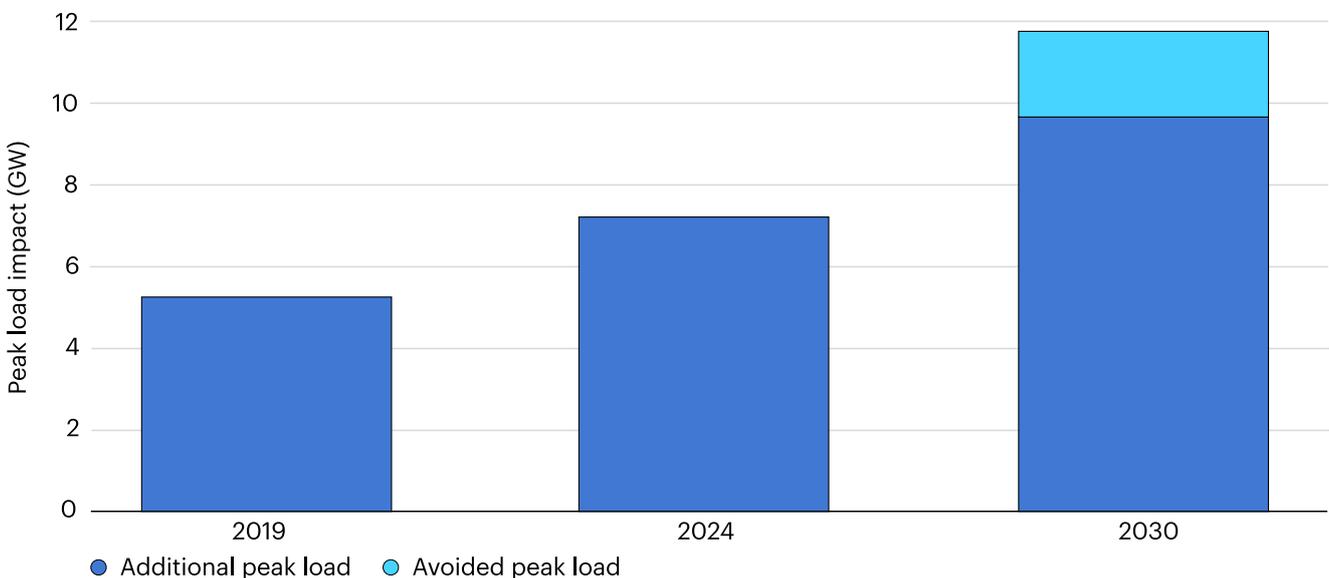
Energy efficiency and demand response policies can also contribute to electricity security by reducing the risk of outages resulting from peak demand.

Different programmes have demonstrated success in reducing peak electricity demand and preventing outages. Studies in [the United Kingdom](#) and [the United States](#) show that real-time feedback and pre-event communications lead to reductions in consumption and peak demand of about 3%.

This is especially relevant in regions where grid reliability is a significant concern. For instance, in India, increased electrification, combined with a rapid adoption of appliances such as air conditioners, is putting additional strains on power grids and leading to new peak demand

records and resiliency challenges. In 2019, 1°C in outdoor temperature increase was associated with a 5 gigawatt (GW) increase in peak electricity demand; with rising air conditioner ownership and increasing temperatures, this value rose to 7 GW in 2024 and could further rise to 12 GW in 2030 without further efficiency action. If India were to experience similar heatwaves as in recent years – with temperature anomalies of over 4°C – the additional peak load would amount to 47 GW. However, if all new air conditioners in India were highly efficient (e.g. through increased minimum energy performance standards), peak load during a heatwave could be reduced by almost 9 GW or about 20%, significantly decreasing the risk of blackouts or brownouts.

**Additional peak load caused by an outdoor temperature increase of 1°C, India, 2019 to 2030, and avoided peak load due to higher efficiency ACs sales, India, 2030**



**Notes**  
High efficiency scenario assumes replaced and new equipment from 2024 to 2030 to be in line with the [IEA Net Zero emissions guide space cooling](#) (SEER 5.0 – 6.5).

**Source**  
IEA (2024) [Real-Time Electricity Tracker](#), (accessed on 19 September 2024); IEA (2025) [Weather, Climate and Energy Tracker](#), (accessed on 19 September 2024).

## Need more information?

IEA (2025), [Energy Security](#).



**Multiple Benefits of Energy Efficiency**  
[iea.li/MultipleBenefitsEE](https://iea.li/MultipleBenefitsEE)

