

**Thanks to the Stove Industry Association for some of the following details and references.**

### **Key Facts – Carbon Emissions**

- The CO<sub>2</sub>eq emission factor (kgCO<sub>2</sub>e/kWh) of wood logs is 1/19th that of electricity (0.01074 compared to 0.207074) and 1/16th that of mains gas (0.01074 compared to 0.18). Source: <https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2023>
- An alternative comparison is that wood fuels deliver carbon savings compared to fossil fuels and compared to most forms of renewable energy as well. According to the [Review of the Scottish Wood Fuel Industry, Sept 2021](#) conducted on behalf of Scottish Forestry, burning logs generates 4g of CO<sub>2</sub> per kW hour, compared to 48g/kWh for wind energy and 123g/kWh for ground source heat pumps (see p.9).
- A modern wood stove emits 94% less CO<sub>2</sub> than direct electric heating e.g. an electric fire and just 22% of the total kgCO<sub>2</sub>e of a heat pump with a coefficient of performance (COP) of 3.5. (At current grid carbon intensity).
- When a heat pump is required to provide heat suddenly, for example during temperature fluctuations, the COP drops and carbon emissions increase even when the latest high temperature heat pumps that achieve a COP of around 3 are deployed – see <https://www.bbc.co.uk/news/business-67511954> When a modern stove is paired with a heat pump, not only is the optimal heat pump operation facilitated, but top-up heat from the stove is available on demand to mitigate temperature fluctuations and weather events.

**As well as being a very low carbon sustainable fuel, burning wood on an efficient stove has multiple additional benefits:**

- Wood fuel provides an independent fuel source. In the event of grid outage, heat and light are immediately available.
- Wood fuel reduced grid constraint problems (the ability to supply electricity against increasing demand).
- Using wood gives the individual the right to source and use wood fuel to their best financial, environmental and personal advantage.
- It deprives homeowners of the [significant mental wellbeing aspects](#) which accompany the operation of an efficient wood fire.
- Trees and woodland require management for reasons of safety, commercial use, aesthetics, development, biodiversity and optimising carbon capture. Selling wood for fuel can offset costs associated with management.
- Processing wood for fuel offers income opportunities for a variety of individuals and (usually small) businesses that are required to work with / manage trees.

