

 Impacts

How much CO₂ is emitted to produce a kWh of French electricity ?

The 'CO₂ emission factor' of a kilowatt-hour (kWh) of electricity stands for the amount of CO₂ that was emitted to produce this kWh. Is the emission factor identical for every kWh consumed in France ? How can we measure it ?



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Several methods are available to calculate CO₂ emission factors. Depending on the angle, it can vary for the French kWh of electricity from 40 g (yearly average emission per kWh) up to 180 g (average emission of a kWh used for electric heating). The 40 g yearly average does not reflect the fact that CO₂ emissions to generate electricity vary according to the season, or hour in the day.

A forecasting approach provides an even different result : avoiding the consumption of an extra kWh of electricity in the grid is estimated to lead to saving 400 to 700 g of CO₂, according to a calculation by the French energy agency Ademe and Electricity grid authority RTE.

The most appropriate method depends on the purpose. When looking for an annual emission assessment, the approach based on the yearly average is relevant. But when evaluating the potential impact of an electricity saving measure, or the impact of the development of new electricity-using activities, the forecasting approach is more effective.

