

Technical Papers supporting SAP 2009



Revised Emission Factors for the National Calculation Methodologies

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Revised Emission Factors for the National Calculation Methodologies

This paper presents the proposed revised emission factors for the National Calculation Methodologies (SAP and SBEM). These revised emission factors take into account the impact of CO₂ and other greenhouse gases (N₂O and CH₄) in terms of CO₂ equivalent¹. They also incorporate a much wider consideration of the upstream emissions arising from energy use than the SAP 2005 factors and include fugitive emissions as well as emissions from energy used during extraction, processing, transformation and delivery to the final user². A consistent methodology has been applied across all fuel types (including a range of biofuels) and is based on the most recent data on emissions and UK fuel supply. Inevitably there are some areas in which full data is not available and suitable estimates have had to be made. It is the intention that these emission factors will be used in the SAP 2009 and in SBEM. However, they may be revised if additional information comes to light which significantly impacts on the values provided here.

The methodology used to obtain the emission factors is described in more detail in a further consultation document STP 09/CO202³ and the data sources and assumptions are available from CLG on request⁴

The greenhouse gas emissions are presented in the following table and it is intended that these factors will remain fixed for the life of SAP 2009, which is to be from 2010 to 2013.

¹ Considered over a 100 year time horizon.

² The consideration of emission do not extend to used to produce the infrastructure and machinery and materials used in fuel production, nor does it consider the impact of alternative uses e.g., land use change.

³ Methodology for the Generation of Emission Factors for Use in the National Calculation Methodologies.

⁴ Revised Emission Factors for the National Calculation Methodologies: Data Sources and Assumptions STP09 CO203

Fuel	kgCO₂eq/kWh
Gas:	
mains gas	0.206
LPG	0.251
Oil:	
domestic heating oil (burning oil/kerosene)	0.284
gas oil/diesel	0.290
fuel oil	0.306
appliances that specifically use FAME (biodiesel) from any biomass source	0.098
appliances that specifically use FAME (biodiesel) sourced from used cooking oil (1)	0.019
appliances that specifically use rape seed oil	0.058
appliances able to use domestic heating oil or liquid biofuel	0.284
appliances able to use gas oil or liquid biofuel	0.290
B30K(2) (3)	0.205
Solid fuel:	
house coal	0.382
anthracite	0.365
coal (non -domestic)	0.391
manufactured smokeless fuel (domestic)	0.404
manufactured smokeless fuel (non-domestic)	0.386
wood logs	0.018
wood pellets	0.037
wood chips	0.015
dual fuel appliance (mineral and wood)	0.243
Electricity:	
grid electricity - all tariffs	0.591
electricity displaced from grid	0.591
electricity generated by CHP	0.591
Community heating and CHP(4)(5):	
gas used to generate heat or heat and power	0.206
coal used to generate heat or heat and power(6)	0.391
LPG used to generate heat or heat and power	0.251
oil used to generate heat or heat and power (7)	0.291
electricity used to generate heat or heat and power	0.591
waste used to generate heat or heat and power	0.047
biomass used to generate heat or heat and power(8)	0.019
biogas used to generate heat or heat and power	0.024
waste heat from power stations (9)	0.058
geothermal heat sources	0.041

(1) This factor can be used only where used cooking oil is verified as the sole biomass source.

(2) This factor is for appliances that specifically use a 70:30 blend of kerosene:FAME from cooking oil and relates to a fuel specification being developed by OFTEC.

(3) It is possible to generate emission factors for other blended fuel using the above factors provided they are appliance specific and separate fuel supply chains exist.

(4) Additional emissions associated with heat delivery via distribution networks are directly included within SAP.

(5) For electricity the "electricity generated by CHP" emission factor should be used.

(6) This is the value for non-domestic coal.

(7) This value is based on the mix of petroleum products used to generate heat in the UK (predominantly gas oil).

(8) This value is based on the mix of biomass sources used to generate heat in the UK.

(9) This value takes account of the reduction in electricity generation that occurs when heat is produced at a high enough temperature to provide district heating.