



CO₂ EMISSION FACTORS

The Data Centre CO₂ emissions are presented in the tool. Therefore is necessary to know the CO₂ emissions from electricity consumption. These emissions depend on the grid energy mix and are calculated using standard weighting factors (Table 1) and knowing the energy mix of each country. Moreover, the CO₂ emission factors for each energy source used on-site are also needed (Table 2).

PRIMARY ENERGY CONVERSION FACTORS FOR ELECTRICITY

Table 1. CO₂ emissions conversion factors for electricity production

Energy source	CO ₂ emission [kgCO ₂ /kWh] ¹
PV	0
Wind	0
Hydro	0
Nuclear	0
Coal	1.09
Combined cycle	0.41

¹ IDAE, "CO₂ emission factors," [Online]. Available: http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_Factores_Conversion_Energia_y_CO2_2011_0a9cb734.pdf



PRIMARY ENERGY CONVERSION FACTORS FOR ON-SITE ENERGY SOURCES

Table 2. CO₂ emissions conversion factors for on-site sources

Energy source	CO ₂ emission [kgCO ₂ /kWh] ¹
PV	0
Wind	0
Gas	0.22
Biogas	0.10
Biomass	0.04
District cooling ²	0.11
District heating ³	0.14

¹ IDAE, "CO₂ emission factors," [Online]. Available: http://www.idae.es/index.php/mod.documentos/mem.descarga?file=/documentos_Factores_Conversion_Energia_y_CO2_2011_0a9cb734.pdf

² Weighting factors calculated assuming a cooling production base on a Biogas CHP plant with an electrical and thermal efficiency of 60% and 32%, respectively. The distribution losses assumed are 10% and the COP of the absorption chiller is 1.2.

³ Weighting factors calculated assuming a heat production base on a Biogas CHP plant with an electrical and thermal efficiency of 60% and 32%, respectively. The distribution losses assumed are 10%.