

Change in methodology for calculating CO₂ emissions from energy use

The method used to estimate carbon emissions from energy consumption in this year's Statistical Review has been revised.

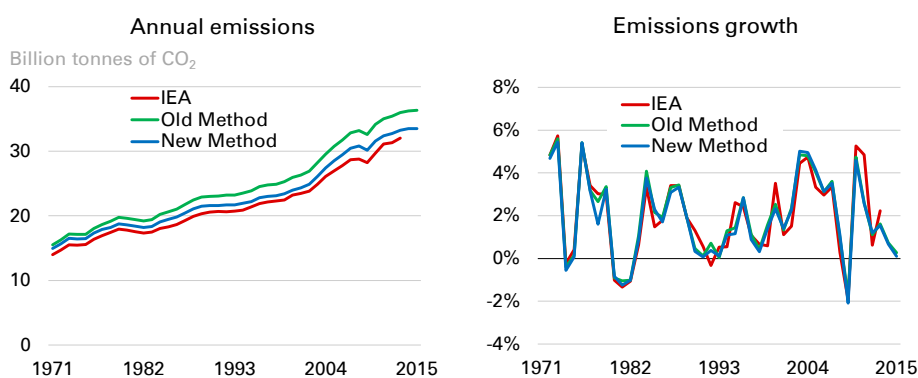
The previous method for calculating CO₂ emissions applied a single emission factor to each of oil, gas and coal, as reported in the footnote of the table 'Carbon Dioxide Emissions'. Those emission factors were based on standard global conversion factors compiled on the basis of average carbon content: oil at 73,300 kg CO₂ per TJ (3.07 tonnes per tonne of oil equivalent, toe); natural gas at 56,100 kg CO₂ per TJ (2.35 tonnes per toe); and coal at 94,600 kg CO₂ per TJ (3.96 tonnes per toe). The previous method also took no account of fuel consumption for non-combustion purposes.

The revised method used in this year's Statistical Review differs in two main respects. First, the revised estimates use the Default CO₂ Emission Factors for Combustion for each energy product type from the list of IPCC emission factors¹. Biofuels are considered as non-emitting CO₂, consistent with the practice of the International Energy Agency (IEA).

Second, the revised method takes account of fuel consumption for non-combustion purposes, such as the use of oil and natural gas in the petrochemicals industry or of oil to produce bitumen for road construction. Estimates of the share of non-combusted fossil fuels – by country and by year, taken from the IEA's energy balances² – are subtracted from the total consumption of each fuel before applying the relevant emission factors.

A comparison of the old and new methods, along with the IEA's CO₂ from energy use series, is presented below. Applying the old methodology to the fuel consumption numbers reported in the current edition of the Statistical Review would result in CO₂ emissions about 8% higher than those derived from the new method. The change in the growth rate of CO₂ emissions between the two methods are relatively small, ranging from 0.2% to -0.3% over the past 25 years, with the difference over this period averaging less than 0.1%.

Global CO₂ emissions



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¹ IPCC 2006, 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T., and Tanabe K. (eds). Published: IGES, Japan; available at http://www.ipcc-nggip.iges.or.jp/public/2006gl/pdf/2_Volume2/V2_0_Cover.pdf

² International Energy Agency, Energy Balances of Non-OECD Countries, Paris, France, 2015; International Energy Agency, Energy Balances of OECD Countries, Paris, France, 2015; International Energy Agency, Energy Statistics of Non-OECD Countries, Paris, France, 2015; International Energy Agency, Energy Statistics of OECD Countries, Paris, France, 2015