The contribution of HFCs to European Greenhouse Gas Emissions

Each year, each member state of the European Union submits estimates of its greenhouse gas emissions to the United Nations as part of its commitment to the Rio Convention. These numbers are simply added together by the European Environment Agency (EEA) to provide totals for the whole of the EU.

All of the conclusions below are based on the EEA numbers and exclude the effect of changes in land use. In this way only social and industrial contributions are considered.

The actual emission estimates are shown in the accompanying graph, covering the years 1990 to 2005. These show a reduction in total greenhouse gas emissions of 1.8% relative to the baseline years.[1]

Carbon dioxide emissions are continuing to make the largest contributions. Expressed on a common basis (as their carbon dioxide equivalents), carbon dioxide (CO2) itself accounted for 83% of the emissions in 2005, methane (CH4) emissions were 7.4%, nitrous oxide (N2O) 7.9%, hydrofluorocarbons (HFCs) totalled 1.3%, perfluorocarbons (PFCs) 0.1% and sulphur hexafluoride (SF6) 0.2%.

Emissions of CO2 grew substantially (by 125 million tonnes) during the period 1990 to 2005 and the most significant reductions in this time were in methane and nitrous oxide. PFC and SF6 emissions also fell markedly relative to the 1995 baseline but their effect on total emissions was not significant.[2]

Emissions of HFCs grew, from 1% of the total in 1995 to 1.3 % in 2005 (or by 12 million tonnes of CO2 equivalent). This growth in emissions reflects both the part played by HFCs in the global conversion of refrigeration, air conditioning and insulation foam blowing away from CFCs (chlorofluorocarbons) and the steps taken by chemical manufacturers to reduce byproduct emissions. It is apparent from the graph that, compared to the growth in CO2 emissions, the HFC change is not significant.

Because the baseline year for F-gases (HFCs, PFCs and SF6) is 1995 and not 1990 in the EU, all comparative calculations and statements should be made on that basis. This is the principal reason that the conclusions given above are very different from those highlighted by the EEA, even though exactly the same basic data are used.

European Greenhouse Gas emissions (EEA data) graphs 60 KB

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[1] Calculated by dividing the total estimated emissions in 2005 by the sum of the emissions of F-gases in 1995 and other greenhouse gases in 1990.

[2] Reductions in PFC and SF6 emissions from their 1995 baseline were 58% and 42% respectively but these amount to less than 0.1% overall.