The Modelling of Anthropogenic Methane Emissions: Methodology and Estimates

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At the Kyoto Conference in 1997, OECD countries together with a number of countries in Eastern Europe and the FSU ('Annex I countries') committed themselves to quantitative targets for emitting certain Greenhouse Gases (GHGs). Six gases were singled out, of which carbon dioxide (CO2) and methane (CH4) are the most important, accounting for about 95 per cent of global anthropogenic GHG emissions. The parties to the Kyoto Protocol are committed to reduce these emissions to a level around 5 per cent below emissions in 1990. Unlike emissions of CO2, which almost exclusively (close to 95 per cent) derive from fossil fuel combustion, methane emissions stem from a multitude of sources and the range of estimates for country-by-country and global emissions is very large. This reflects the fact that for most of the sources of methane, emission levels are afflicted by large uncertainties.

This paper elaborates on a methodology for calculating methane emissions suitable for the purposes of macro economic modelling, and gives best-guess estimates for the year 1995. It is part of a wider research project into the economic effects of climate change policies at the Oxford Institute for Energy Studies (OIES). The baseline for methane emissions was needed as data input for a global simulation model for climate change policies (CLIMOX) maintained at the OIES.

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