

Technical Appendix 1: The Greenhouse Gas Time Horizon

Different greenhouse gases have different life-times in the atmosphere and so it is necessary to choose a timeframe if their warming effects are to be compared. Carbon dioxide and nitrous oxide have very long lifetimes but methane is broken down to carbon dioxide after about a decade.

The convention is to compare warming effects over 100 years. Over this period methane has about 25 times the warming effect of carbon dioxide per unit mass. As described in the report, we have followed this convention to allow comparability of data.

However it is important to recognise that the 100-year horizon is an arbitrary convention adopted by the signatory governments of the UNFCCC, not the IPCC. There are many reasons to question this convention, including the fact that for many reasons, global warming that occurs early may have the most serious consequences. Over 40 years a unit of methane has 49 times the effect of a unit of methane and over 20 years it has 72 times the effect (Dessus *et al.* 2008).

The official emissions from agriculture submitted to the UNFCCC by the British government are around 51 million tonnes CO₂e (DECC, 2010). The proportions, based on a 100-year horizon are shown in Figure 1a. By way of comparison, Figure 1b shows the proportions based on a 20-year horizon. This would effectively double the contribution from agriculture.

In contrast to other sectors such as energy, transport and buildings, reduction of emissions from the agriculture sector does not lend itself to straightforward technical solutions, and this is particularly true of the livestock subsector. In consequence, the adoption of shorter time-horizon conventions would make a considerable difference to policy and strongly reinforce many of the arguments made in this report for

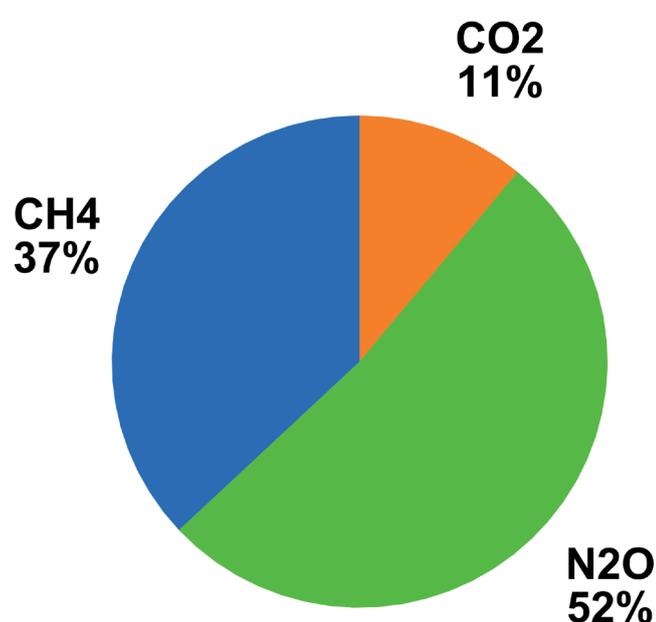


Fig.1.1a

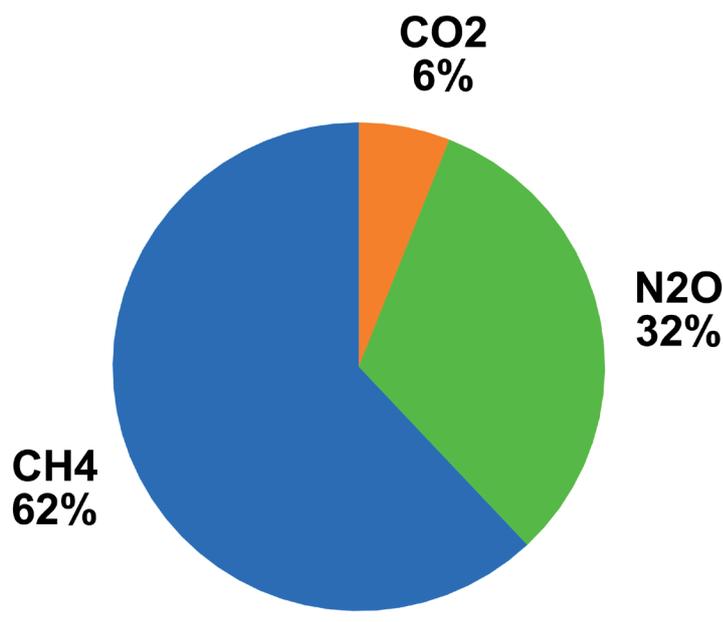


Fig.1.1b

reducing the proportion of livestock products, particularly from ruminants.

References

DECC (2010). UK Climate Change Sustainable Development Indicator:

2009 Greenhouse gas emissions, provisional figures and 2008 Greenhouse gas emissions, final figures by fuel type and end user [online] available at: http://www.decc.gov.uk/en/content/cms/statistics/climate_change/gg_emissions/uk_emissions/2009_prov/2009_prov.aspx [accessed 01/07/2010]

Dessus, B. Laponche, B. Le Treut, H. (2008) Effet de serre, n'oublions pas le methane. Recherche 417, 46. In English as: Global Warming : The Significance Of Methane [online] available at: www.global-chance.org/IMG/pdf/CH4march2008.pdf [accessed 01/07/2010]