

How CALM fits the international guidelines for Greenhouse gas accounting

Starting from the IPCC methodology, the CALM calculator follows the guidelines provided by DEFRA and the GHG Protocol Standard. For more information see <http://www.ghgprotocol.org/files/ghg-protocol-revised.pdf>

This Standard is the most widely used international accounting tool for Government and businesses leaders to understand, quantify and manage Greenhouse Gas (GHG) emissions. It uses three “Scopes” to describe emissions that arise from a business. As a minimum the GHG Protocol Standard advises that companies should ensure their GHG inventories include Scope 1 and Scope 2 emissions. Businesses are encouraged to include Scope 3 emissions if they are able to influence the upstream companies into reducing their emissions. A description of what each Scope covers and how they relate to land-based businesses follows:

- **Scope 1** refers to **direct GHG emissions**. These are direct emissions of greenhouse gases from sources that are owned or controlled by the company. Applied to a farm or estate *Scope 1* refers to emissions from direct combustion of fuels in heaters, boilers, tractors and other vehicles used in the farm business. On farms they also include GHG emissions from livestock and their waste, from cultivations and from the application of inorganic and organic nitrogen fertilisers.
- **Scope 2** refers to **indirect GHG emissions**. Companies report the emissions from the generation of purchased electricity that is consumed by the business as Scope 2. These emissions are a special category of indirect emissions. For many companies, purchased electricity represents one of the largest sources of GHG emissions and the most significant opportunity to reduce these emissions. However for land management businesses these emissions are much less significant.
- **Scope 3** refers to **other indirect GHG emissions**. These are a consequence of the activities of the business, but occur from sources not owned or controlled by the business. The prime examples of scope 3 emissions for land-based businesses are the emissions associated with the manufacture of fertilisers and feeds. The guidelines suggest that companies may choose to include information on *Scope 3* emissions, and are encouraged to include those which are significant. CALM allows you to calculate the emissions associated with the production of nitrogen fertilisers. These emissions can be significant and being aware of them is important even though there is little individually land managers can do to reduce such emissions in the fertiliser industry. Other Scope 3 emissions can be added to CALM in the future when more information is available to measure them – e.g. for animal feed.

The CLA CALM calculator follows the GHG Protocol Standard by adopting Scope 1 and 2. With this approach if all farms and estates in the UK carried out a CALM audit, the figures, in principle, should add up to the total national emissions for agriculture and land use change and forestry. In this way a reduction in emissions on your farm as measured by your CALM calculation should result in an overall reduction in UK emissions, as currently measured.

Modifications of the National Account methodology for farm level application.

In adapting the IPCC methodology to the farm level we have introduced some adjustments. We have taken the decision for organic manures only to include the emissions of the organic manure that is used, or comes on to the farm/estate, whereas in the national inventory no such ‘trading’ is recognised and the manure calculations are based on livestock numbers. We have based livestock emissions not on ownership of the stock but where the animals graze. We have also offered the possibility for a farm to choose a milk yield class for their dairy cows rather than using a national average yield figure.

CALM peer reviewed

CALM has been peer reviewed by Gareth Edwards-Jones, Professor of Agriculture & Land-Use Studies at the University of Wales, Bangor and author of "Carbon footprinting and UK horticulture: Concepts and commercial relevance".

Prof. Edwards Jones in a report on his analysis of the workings of CALM said:

"CALM is an excellent first step, and offers a useful tool to land-managers. The results provided by the CALM calculator are reasonable given the current state of scientific knowledge on climate change, and if used correctly CALM can provide a useful greenhouse gas account for a land-based business."