Methane emissions reporting: draft methodology

Why report methane separately?

Methane emissions have contributed 40% of the 1.3C degrees of warming we've seen to date.[1] In the short-term it has 80 times the warming potential of carbon dioxide; Agriculture is the predominant source: 32% of anthropogenic methane emissions come from livestock (particularly from manure and ruminant enteric fermentation) whilst a further 8% come from rice cultivation[2]

Due to its short life, reductions in methane emissions will have an almost immediate climate impact.

> *"Cutting methane is the strongest lever we have to slow climate change over the next 25 years and complements necessary efforts to reduce carbon dioxide. The benefits to society, economies, and the environment are numerous and far outweigh the cost. We need international cooperation to urgently reduce methane emissions as much as possible this decade." Executive Director of UNEP.*[3]

Whilst relatively few companies in the agri-food sector currently report their methane emissions separately, the recent COP26 announcement on a Global Methane Pledge, a collective EU and US goal for reducing man-made methane emissions by at least 30% from 2020 levels by 2030, means we are likely to see more businesses setting ambitious targets and actions over the years to come. Reporting emissions is more likely to lead to greater reductions and the potential co-benefit of supply chain resilience.

Estimating methane emissions using existing data

Greenhouse gas emissions are typically estimated by obtaining activity data such as fuel use (volume, mass or energy) or distance travelled (miles or km by vehicle type) and applying a standard emissions factor. Most sets of emissions factors, including the two most commonly used (US Environmental Protection Agency and UK Government) include separate emissions factors for carbon dioxide, methane and nitrous oxide. Common sources of electricity emissions factors (e.g. EPA, IEA) also split out gases.

Calculating methane is usually therefore straightforward for scope 1, electricity in scope 2 and some parts of scope 3: it is possible to use existing activity data and apply the specific methane factor rather than combined CO_2e factor[4].

Where specific methane factors are not available then it may be possible to estimate the split by greenhouse gas by looking at the underlying fuels used for the activity. Where greenhouse gas emissions are estimated using a high-level approach such as expenditure-based Environmentally-Extended Input-Output (EEIO) then national greenhouse gas inventories, split by industry, may be used to estimate methane's share of the total[5]. As for combined greenhouse gas calculations, proxies may be used where suitable factors are not available, emissions are not significant and a reasonable estimate can be made.

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[1] https://www.carbonbrief.org/guest-post-the-global-methane-pledge-needs-to-go-further-to-help-limit-warming-to-1-5c

[2] https://www.unep.org/news-and-stories/story/methane-emissions-are-driving-climate-change-heres-how-reduce-them

[3] https://www.unep.org/news-and-stories/press-release/global-assessment-urgent-steps-must-be-taken-reduce-methane

[4] Note that some emissions factor datasets express CH_4 as CO_2e so the resulting number must be divided by the methane GWP used by the dataset (usually GWP100: 25 from AR4) to get methane emissions.

[5] e.g. see the UK's National Inventory here: https://www.ons.gov.uk/economy/environmentalaccounts/datasets/ukenvironmentalaccountsatmosphericemissionsgreenhousegasemissionsbyeconomicsectorandgasunitedkingdom

How to report methane emissions

Methane emissions should be reported alongside and considered in the context of overall greenhouse gas emissions. For consistency methane should, as a minimum, be reported in CO_2 equivalents (CO_2e) using GWP-100. The IPCC Fifth Assessment Report (AR5) gives GWP-100 of 34 for biogenic-source emissions and 36.8 for fossil-sourced emissions. Emissions from both sources should be reported separately unless one source is insignificant. Estimates of the GWP of methane are updated periodically by the IPCC but these take time to be adopted by the relevant accounting standards (e.g. GHG Protocol). For consistency, the same GWP values should be used for methane reporting as used in the latest complete (all GHG) corporate inventory from which the methane impact is derived to avoid the need to recalculate the whole inventory. Note that if the GWP values used do change then comparative (prior) years inventories should be restated as needed using the same GWP values.

The short-term impact of methane should also be reported using GWP-20 for consistency with standard GWP-100 reporting. This may be complemented by other ways of estimating the warming potential or temperature potential (e.g. GWP* or GTP). Note that the equivalent impact for the total inventory should also be calculated if the two are to be subject to comparisons.

This is very much the start of a dialogue on methane emissions accounting, and as Upfield continues to discuss and explore opportunities to strengthen and harmonise approaches to measuring and accounting for methane emissions and gain feedback from their network of partners, we expect more opportunities to develop across policy, governance, science and technology.

Upfield-specific methodology

We followed the general methodology, using the same underlying activity data used for the corporate GHG inventory and applying methane rather than CO_2e factors for scopes 1 and 2 and parts of scope 3 covered by standard emissions factors.

Ingredients are the largest source of emissions for Upfield. The original emissions factors used in the corporate inventory from the World Food LCA Database (WFLDB) were not split by gas so we obtained revised factors split by gas from the database owner Quantis. The revised CO_2e factors are different from those originally used in the corporate footprint but the differences are not material.

Where specific methane emissions factors were not available we used proxies and estimates:

- The category “other ingredients” (mainly colourings and flavourings) contains several hundred ingredients. As these are mainly of plant origin we used an average of the emissions factors used for plant oils. Other ingredients are estimated to form less than 1% of methane emissions and so the use of a proxy is reasonable as it is unlikely to result in a significant misstatement.
- The LCA factors originally used for the corporate footprint was not split by greenhouse gases so it has only been possible to estimate emissions from packaging at a high level. A review of LCAs for the main materials (polypropylene and PET) found methane (excluding methane from end-of-life) forms about 5% of Upfield’s CO_2e emissions. To estimate methane emissions from packaging we applied this 5% to the CO_2e total from packaging.

Limitations and opportunities for development

Reporting methane emissions separately is a relatively new concept for the agriculture and food sector and there are limitations to these first methane calculations. The key limitations are:

- Where CO_2e emissions factors are not broken down by gas we have had to estimate emissions using proxies where necessary.
- There are small discrepancies between the emissions factors used in the original corporate footprint (covering CO_2e) and the revised factors from an updated version of the LCA database that was split by greenhouse gas. These don't result in a material difference to the overall footprint.
- Where emissions factors are updated, or existing CO_2e factors are broken down into constituent gases we will compare the results obtained by using existing and new factors; we don't anticipate that this will result in any material changes but where it does we will restate numbers as necessary and explain the reasons for the changes.

The opportunity

To scale agri-food sector-wide methane emissions reporting at the level and pace required to meet the Global Methane Pledge commitments, we must consider opportunities to drive consistency and credibility of target setting, data collection, analysis and reporting methods, factoring in the challenges of measuring impacts across different commodities and geographies:

- Target setting: Develop meaningful, robust and simple targets that resonate with key stakeholders including investors, civil society and consumers.
- Data collection: Given that relatively few organisations currently track their methane emissions, there is a lack of primary data available to adequately quantify on-farm impacts. More work is required to collect primary data, with an immediate focus on supply chains with the most material emissions. In the meantime, secondary data can drive on farm positive behaviours, but data quality, verification and transparency of accounting methods is key.
- Data analysis: Methane footprints can enable greater understanding of the drivers of emissions, which supports consumer education and sustainable diets. Insights need to be relevant and understandable, not only enabling farmers to understand what is driving their methane emissions but also what practical steps they can take to reduce emissions in the context of their wider GHG impacts whilst enhancing productivity.
- Reporting methods: When considering reporting methane emissions separately, the industry should consider taking learnings from established standards such as GHG protocol guidance and emerging frameworks such as the FLAG SBTi guidance which set out principles for wider GHG accounting. Learnings too can be taken from other sectors such as Oil and Gas, including the Methane Guiding Principles (https://methaneguidingprinciples.org/methane-guiding-principles/)