

GHG Emissions Indicator - Baseline Establishment

October 2017

The Baseline for the global dairy sector is to be set at the FAO (2013) figure of **2.9 CO₂_eq per KG of fat and protein corrected milk (FPCM)**. This figure globally, appreciating the regional variations, has a range of 1.6 – 9.0kg CO₂_eq per kg of FPCM and has a variance of +/- 26% (to a 95% confidence level). The figure covers milk production from both dairy cows and buffalo.

The baseline figure includes emissions associated with fertilizer and external feed production and all farm processes, processing at dairy plants and transportation. Meat production from related culled and fattening activities is not included in this figure.

This figure for milk is equivalent to approximately 2.8% of global anthropogenic GHG emissions. If we were to include the emissions from meat production from dairy related culled and fattened animals, the figure would be approximately 4%.

Global context:

In line with, and using the data from FAO reports, the table below provides a regional baseline for GHG emissions from dairy production and processing. This will enable future aggregate reporting to be completed with valuable context.

Region	CO ₂ _eq per KG of FPCM
N. America	1.69
Latin America and Caribbean (LAC)	3.84
W. Europe	1.65
E Europe	1.60
Russian Federation	1.90
Near East and North Africa (NENA)	4.07
Sub Saharan Africa (SSA)	9.01
South Asia	4.01
East and South east Asia	2.78
Oceania	1.60
World	2.90

Rationale:

The baseline figure is an important starting point to establish how the dairy sector is progressing with regards the emissions relating to the production, processing and sales of milk and dairy products. Over time, with the established three-yearly reporting commitments for DSF members, the trend line will provide a more robust and relevant indication of the sector's progress.

In establishing the baseline, the DSF initially sought from its members (covering in excess of 30% of global milk production) reference studies that they had already undertaken or were utilizing at a local level.

DSF members submitted approximately 20 different studies. Through a review process, it became apparent (which is often the case) that with the wide variation of methodologies applied and assumptions made, aggregation is not a feasible route to establishing a meaningful baseline. External expertise was sought at this point to test this hypothesis, which was confirmed.

The FAO in 2010 undertook a study titled '*Greenhouse Gas Emissions from the Dairy Sector*' a lifecycle assessment and subsequently (Opio et al) in 2013 titled, '*Greenhouse Gas Emissions from Ruminant Supply Chains*'. The results are summarized in Gerber et al. '*Tackling Climate Change through Livestock*' (see links at the conclusion of this document). Both studies included not only an expert team of authors, they also involved expert advisory groups to ensure approaches to methodology and data were as robust as possible.

Since publication, both studies have been peer reviewed and been cited in many other studies as the reference for the dairy sector's contributions to anthropogenic GHG emissions.

It has been agreed, in the knowledge that there are no other global studies that have undergone the same levels of rigor for both study design and peer review, to utilize the outputs of these reports as the basis for the DSF baseline for GHG Emissions.

In adopting these figures, the dairy sector acknowledges that there are some slight differences in methodology from what the FAO has applied and how the dairy sector will be quantifying its progress. As mentioned above, though the FAO figure is important as an initial benchmark, over time and as a trend line is established, and the deltas reported at specific reporting intervals appreciated, the initial baseline will become less important.

The international dairy sector has developed a 'common methodology' (which has also now been adopted as the methodology for the FAO Livestock Environmental Assessment Program), which will be utilized by the sector in evaluating its performance. The International Dairy Federation (IDF), has the responsibility to monitor scientific developments and ensure the methodology remains current. It is this methodology DSF members will be applying when establishing their GHG performance, thus allowing aggregation to take place.

Links:

Greenhouse Gas Emissions from the Dairy Sector
<http://www.fao.org/docrep/012/k7930e/k7930e00.pdf>

Greenhouse gas emissions from ruminant supply chains
<http://www.fao.org/docrep/018/i3461e/i3461e.pdf>

Tackling Climate Change Through Livestock
<http://www.fao.org/docrep/018/i3437e/i3437e.pdf>