

Dataset Information:

Title	Enteric Fermentation
Abstract	Greenhouse gas (GHG) emissions from enteric fermentation consist of methane gas produced in digestive systems of ruminants and to a lesser extent of non-ruminants. Computed at Tier 1 following the 2006 IPCC Guidelines for National GHG Inventories (IPCC, 2006); available by country, with global coverage and relative to the period 1961 to present, with annual updates, and projections for 2030 and 2050.
Supplemental	This domain contains data on GHG emissions, associated emission factors and underlying activity data. The FAOSTAT Emissions data are estimates by FAO and do not coincide with GHG data reported by member countries to UNFCCC. The database is intended primarily as a service to help member countries assess and report their emissions, as well as a useful international benchmark. The FAOSTAT Emissions data are disseminated publicly to facilitate continuous feedback from member countries.
Creation Date	2012
Last Update	2013
Data Type	Climate Change - Greenhouse Gases
Category	Environment
Time Period	1961 to present; projections to 2030 and 2050
Periodicity	Annual
Geographical Coverage	World
Spatial Unit	Country
Language	Multilingual (EN, FR, ES)

Methodology and Quality Information:

Methods and processing	<p>GHG emissions from enteric fermentation consist of methane gas (CH₄) produced in digestive systems of ruminants and to a lesser extent of non-ruminants. The FAOSTAT data are computed at Tier 1, following IPCC 2006 Vol. 4, Ch. 10.</p> <p>The emissions are estimated at country level, using the formula:</p> $Emission = A * EF$ <p>where:</p> <p><i>Emission</i> = GHG emissions, in kg CH₄ yr⁻¹;</p> <p><i>A</i> = Activity data, representing number of livestock in heads (1);</p> <p><i>EF</i> = Tier 1, default IPCC emission factors, expressed in units of kg CH₄ head⁻¹yr⁻¹ (2).</p> <p>(1) Activity data cover the following animal categories: buffaloes, sheep, goats, camels, llamas, horses, mules, asses, pigs, dairy and non-dairy cattle*. For the period 1961-present, activity data are taken directly from FAOSTAT (domain: Production/Live animals). Projections of activity data for 2030 and 2050 for the following categories: dairy and non-dairy cattle, buffaloes, sheep, goats, pigs and poultry, are computed with respect to a baseline, defined as the 2005-2007 average of the corresponding FAOSTAT activity data, and by applying percentage growth rates from FAO perspective studies (FAO, 2006). Activity data for animal categories for which FAO projections were not available were set to the most recent available FAOSTAT value. The FAO projections used cover some 140 countries. Projections of activity data for countries not included assume the same growth rate of neighboring countries.</p> <p>*FAOSTAT livestock data include cattle and dairy cattle. Dairy cattle data are expressed as heads of cows producing milk, and can be found under the domain Production/Livestock Primary by selecting the item cow milk, whole fresh and the element producing animals. Non-dairy cattle is derived from FAOSTAT categories, specifically as: cattle minus dairy</p>
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cattle.

(2) The EF values are those specified by livestock category and regional grouping in IPCC, 2006, Vol. 4, Ch.10, Tabs. 10.10 and 10.11.

Dimensionless conversion factors used are:

10^{-6} , to convert the emissions from kg CH₄ to Gg CH₄; and

GWP-CH₄ = 21 (100-year time horizon global warming potential), to convert Gg CH₄ to Gg CO₂eq (IPCC, 1996: Technical Summary, Tab. 4, pg. 22).

The enteric fermentation domain contains the following data available for download: country-level GHG emissions in both Gg CH₄ and Gg CO₂eq, by livestock species and by species aggregates, as well as their total; implied emission factors; and activity data. Data are available for all individual countries and territories, as well as for standard FAOSTAT regional aggregations, plus Annex I and non-Annex I groups. The data period is 1961 to present, with annual updates, and projections for 2030 and 2050.

Uncertainties in estimates of GHG emissions are due to uncertainties in emission factors and activity data. They may be related to, inter alia, natural variability, partitioning fractions, lack of spatial or temporal coverage, spatial aggregation. In the case of enteric fermentation, more detailed information is available in the guidelines (IPCC, 2006: Vol. 4, Ch. 10, Section 10.3.4).

References

Alexandratos, N. and J. Bruinsma. 2012. World agriculture towards 2030/2050: the 2012 revision. ESA Working paper No. 12-03. Rome, FAO.

IPCC. 1996. Climate Change 1995 - The Science of Climate Change: Contribution of Working Group I to the Second Assessment Report of the Intergovernmental Panel on Climate Change. Cambridge University Press.

IPCC. 2006. 2006 IPCC Guidelines for National Greenhouse Gas Inventories, Prepared by the National Greenhouse Gas Inventories Programme, Eggleston H.S., Buendia L., Miwa K., Ngara T. and Tanabe K. (Eds), IGES, Hayama, Japan.

Data Collection Method	Computed
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Completeness	100%
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Links	www.fao.org/climatechange/micca/ghg/ www.ipcc-nggip.iges.or.jp/public/
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