FAOSTAT domain Emission shares. Methodological note, release October 2022

Dataset Information:

Title	**Emissions shares**
Abstract	The FAOSTAT domain **Emissions shares** disseminates indicators on sectoral *shares* of total national emissions as well as indicators of per capita emissions. Sectoral shares are computed by agri-food system component (farm gate, land use change, pre- and post-production) as well as by sectors of National GHG Inventories used for reporting to the United Nations Framework Convention on Climate Change (UNFCCC)(Agriculture, Land Use Land Use Change and Forestry, Energy, Industrial Processes and Product Use, Waste, International Bunkers). Shares are computed for emissions of single component gases—carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), fluorinated gases (F-gases) — as well as for CO_2 equivalent (CO_2eq), with respect to absolute emissions taken from the FAOSTAT Emissions totals domain. Population data used in per capita emissions are taken from the FAOSTAT population domain. Data are provided by country and relevant regional groups, including the Annex I and Non-Annex I Parties to the UNFCCC, over the period 1990–2020.
Supplemental	The domain Emissions shares contains the following data categories available for download by sector: *a)* shares of total CO_2eq emissions; *b)* shares of total emissions from single gases – carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O) and aggregate F-gases. The latter includes emissions of variousHydrofluorocarbons (HFCs), Perfluorinated compounds (PFCs), SF_6 and NF_3 gases; *c)* per capita emissions (tonnes per capita). The domain provides global knowledge on relevant to food and agriculture. Data are provided using FAO classifications of food and agriculture activities, used by countries for reporting statistics to FAO, as well as classifications of Intergovernmental Panel on Climate Change (IPCC 2006), used for country reporting to UNFCCC.
Creation Date	2016
Last Update	2022
Data Type	Climate Change - Emissions
Category	Environment
Time Period	1990–2020
Periodicity	Annual
Geographical Coverage	World
Spatial Unit	In 2020, 196 countries; 45 areas/territories incl. former territorial entities
Language	Multilingual (EN, FR, ES)

Methodology and Quality Information:

Methods and processing	*Overview* Methods Global Warming Potential (GWP) Emissions in singles gases were converted into their CO_2 equivalents using the IPCC (2014) AR5 global warming potential coefficients. Specifically, we used: GWP (CO_2)=1; GWP(CH_4)=28 GWP(N_2O)=265 and GWP(F-gases)=5 195. The GWP for F-gases was obtained as the mean of AR5 GWPs provided for the roughly 20 F- species (Tab. 3). Aggregate F-gases were obtained by converting total CO_2eq F-gas quantities in PRIMAP-hist v2.3, provided in IPCC (2007) AR4 coefficients, into F-gas amounts using the mean GWP_AR4 (F-gases) = 5 346.

Shares

Two types of shares are estimated, by country and year, as follows:

i) Share of each sector/category in total CO_2eq emissions

These shares represent the contribution to total emissions (in CO_2 equivalent) from all gases and sectors/categories in scope of this domain. Total emissions from all sectors including LULUCF are used as denominator.

$$Share\ of\ sector_{(A,I,Y)} = \left(Emiss.CO_2eq_{(A,I,Y)} / Emiss.CO_2eq_{(A,\sum I,Y)}\right) \cdot 100$$

where:

$Share\ of\ sector_{(A,I,Y)}$	Share of sector I (%) in total CO_2eq emissions for country *A*, year *Y*
$Emiss.CO_2eq_{(A,I,Y)}$	Emissions (Kt CO_2eq) from sector I, for country *A* and year *Y*
$Emiss.CO_2eq_{(A,\sum I,Y)}$	Emissions (Kt CO_2eq) from all sectors $\sum$I (with LULUCF emissions) for country *A* and year *Y*
A, I, Y	Country, sector, and year, respectively

ii) Share of each sector in the emissions from each gas

This share represents the contribution of each sector to total emissions for each gas (N_2O, CH_4, CO_2 or F-gases).

$$Share\ of\ sector_{(A,I,G,Y)} = \left(Emiss.Gas_{(A,I,G,Y)} / Emiss.Gas_{(A,G,\sum I,Y)}\right) \cdot 100$$

where:

$Share\ of\ sector_{(A,I,G,Y)}$	Share of sector (%) in total emissions of gas G from all sectors, for country A and year Y
$Emiss.Gas_{(A,I,G,Y)}$	Emissions of gas G (Kt) from sector I, for country A and year Y
$Emiss.CO_2eq_{(A,G,\sum I,Y)}$	Total emissions (Kt) of gas G from all sectors $\sum$I, for country A and year Y
A, I, G, Y	Country, sector, gas and year, respectively
G	Gases in the scope of the domain are CO_2, CH_4, N_2O and F-gases

Emissions per capita

The indicator emissions per capita is computed as the contribution per person to total emissions (in CO_2 equivalent) for all sectors in the scope of this domain. The emissions per capita is computed as:

$$Emissions\ per\ capita_{(A,I,Q,Y)} = Emiss.Q_{(A,I,Y)} / Population_{(A,Y)}$$

where:

$Emissions\ per\ capita_{(A,I,Q,Y)}$	Contribution per person (tonnes per capita) in total emissions from all sectors for country A and year Y
$Emiss.Q_{(A,I,Y)}$	Total emissions in CO_2 equivalent from sector I, country A and year Y
$Population_{(A,Y)}$	Population of country A in year Y
A, I, Q, Y	Country, sector, total emissions CO_2eq, and Year respectively

References

Crippa, Monica; Guizzardi, Diego; Muntean, Marilena; Schaaf, Edwin; Lo Vullo, Eleonora; Solazzo, Efisio; Monforti-Ferrario, Fabio; Olivier, Jos; Vignati, Elisabetta. 2021. EDGAR v6.0 Greenhouse Gas Emissions. European Commission, Joint Research Centre (JRC) [Dataset] PID: http://data.europa.eu/89h/97a67d67-c62e-4826-b873-9d972c4f670b

Gütschow J., Jeffery L., Gieseke R., Gebel R., Stevens D., Krapp M. and M. Rocha. 2016. *The PRIMAP-Hist National Historical Emissions Time Series.* Earth System Science Data 8, no. 2 (2016): 571–603. Available from: https://www.earth-syst-sci-data.net/8/571/2016/essd-8-571-2016.html (Description paper)

Gütschow, Johannes ; Pflüger, Mika. 2022. The PRIMAP-hist national historical emissions time series (1750-2021) v2.4. Zenodo. https://doi.org/10.5281/zenodo7179775 (Dataset)

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). Published: IGES, Japan. Available from: http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

IPCC AR4. 2007. Fourth Assessment Report Climate Change 2007. GWP values, available from : https://www.ipcc.ch/publications_and_data/ar4/wg1/en/ch2s2-10-2.html

IPCC AR5. 2014. Fifth Assessment Report Climate Change 2014. GWP values, available from: https://www.ipcc.ch/pdf/assessmentreport/ar5/wg1/WG1AR5_Chapter08_FINAL.pdf

Tubiello, F.N. et al., 2022. Pre- and post-production processes increasingly dominate greenhouse gas emissions from agri-food systems, Earth Syst. Sci. Data, 14, 1795–1809, https://doi.org/10.5194/essd-14-1795-2022.

Tubiello, F.N. et al., 2021. Greenhouse Gas Emissions from Food Systems: Building the Evidence Base. Env Res Letters. https://iopscience.iop.org/article/10.1088/1748-9326/ac018e.

Data Collection Method	Computed
Completeness	100%
Useful links	http://www.fao.org/economic/ess/environment/en/ https://www.fao.org/faostat/en/#data/EM

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