Dataset Information:

Title	**Rice Cultivation**
Abstract	Greenhouse gas (GHG) emissions from rice cultivation consist of methane gas from the anaerobic decomposition of organic matter in paddy fields. Computed at Tier 1 following the Revised 1996 IPCC Guidelines for National GHG Inventories (IPCC, 1997) and the IPCC 2000 Good Practice Guidance and Uncertainty Management in National GHG Inventories (IPCC, 2000); available by country, with global coverage and relative to the period 1961-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-present; projections for 2030 and 2050
Periodicity	Annual
Geographical Coverage	World
Spatial Unit	Country
Language	Multilingual (EN, FR, ES)

Methodology and Quality Information:

Methods and processing	GHG emissions from rice cultivation consist of methane gas (CH_4) emitted by anaerobic decomposition of organic matter in paddy fields. The FAOSTAT data are computed at Tier 1 following IPCC, 1997 Vol. 3, Ch. 4 and IPCC, 2000, Ch. 4. The emissions are estimated at country level, using the formula: *Emission = A * EF* where: *Emission* = GHG emissions in g CH_4 m^{-2} yr^{-1}; *A* = Activity data, representing rice paddy annual harvested area in m^{-2} (1); *EF* = Tier 1, default IPCC emission factors, in g CH_4 m^{-2} yr^{-1} (2). (1) Activity data are disaggregated into irrigated, rain-fed and upland water regimes, using default IPCC percentages in IPCC, 1997, Vol. 3, Ch. 4, Tab. 4.11. For the period 1961-present, activity data are taken directly from FAOSTAT (domain: Production/Crops) Projections of activity data for 2030 and 2050 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 (Alexandratos and Bruinsma, 2012). The FAO projections used cover some 140 countries. Projections of activity data for countries not included assume the same growth rate of neighboring countries. (2) Seasonally integrated EF values are specified for key rice producing countries in the guidelines (IPCC, 1997: Vol. 3, Ch. 4, Tab. 4.13). For countries with no default value for EF, the following strategy is applied: for Asia, countries are assigned an area-weighted average EF (15.7 g CH_4 m^{-2} yr^{-1}); in all other regions, countries are either assigned the IPCC EF value reported for a neighbouring country, where one existed, or they are assigned the IPCC global default EF value (20 g CH_4 m^{-2} yr^{-1}). Furthermore, seasonally integrated EF

	values are further modified by the application of a dimensionless scaling factor for water regime (i) and a dimensionless correction factor for organic amendments (ii). (i) The scaling factors for rice paddy water regime (IPCC, 1997: Vol. 3, Ch. 4, Tab. 4.12) are in the range 0-1. Specifically for all countries a scaling factor of 0.7 is used for rain-fed rice and 0 for upland rice or dry conditions (IPCC, 2000: Tab. 3, page 403). (ii) The correction factor for organic amendments is the default value of 2 for all countries, corresponding to the assumption that 40% of farmers use organic amendments (IPCC, 2000: Tab. 3, page 403). Dimensionless conversion factors used are: 10^{-4}, to convert the activity data from m^{-2} to ha; 10^{-9}, to convert the emissions from g CH_4 to Gg CH_4; and GWP-CH_4 = 21 (100-year time horizon global warming potential), to convert Gg CH_4 to Gg CO_2eq. (IPCC, 1996: Technical Summary, Tab.4, pg. 22). The rice cultivation sub-domain contains the following data categories available for download: country-level GHG emissions both in Gg CH_4 and Gg CO_2eq; implied emission factors; and activity data. Data are available for all countries and territories, as well as for standard FAOSTAT regional aggregations, plus Annex I and non-Annex I groups. The data period is 1961-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 rice cultivation, more detailed information is available in the guidelines (IPCC, 2000: Ch. 4, Section 4.9.1.6). *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. IPCC. 1997. Revised 1996 IPCC Guidelines for National Greenhouse Gas Inventories, OECD, Paris. IPCC. 2000. Good practice guidance and uncertainty management in national greenhouse gas inventories. In: J. Penman et al. (Eds.), IPCC National Greenhouse Gas Inventories Programme, Technical Support Unit, Hayama, Japan. IPCC. 2002. Background Papers, IPCC Expert Meetings on Good Practice Guidance and Uncertainty Management in National Greenhouse Gas Inventories. IPCC-NGGIP, p.399-417.
Data Collection Method	Computed
Completeness	100%
Links	www.fao.org/climatechange/micca/ghg/ www.ipcc-nggip.iges.or.jp/public/

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