

The FAO Emissions Database

Statistics and Indicators for Agriculture, Forestry and Other Land Use

27–31 March 2017 – Workshop on Environment Statistics for EAC

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ENVIRONMENT – TEAM
FAO STATISTICS DIVISION



Outline

- ***FAOSTAT AND FDES: NEED for CLIMATE CHANGE RELEVANT STATISTICS***
- ***EMISSIONS STATISTICS and INDICATORS***
- ***CAPACITY DEVELOPMENT***



Food and Agriculture Organization
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Emissions



Emissions - Land Use

Land Use Total

Forest Land

Cropland

Grassland

Burning - Biomass



Emissions - Agriculture

Agriculture Total

Enteric Fermentation

Manure Management

Rice Cultivation

Synthetic Fertilizers

Manure applied to Soils

Manure left on Pasture

Crop Residues

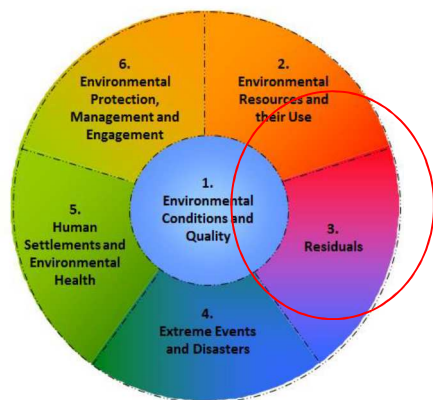
Cultivation of Organic Soils

Burning - Savanna

Burning - Crop Residues

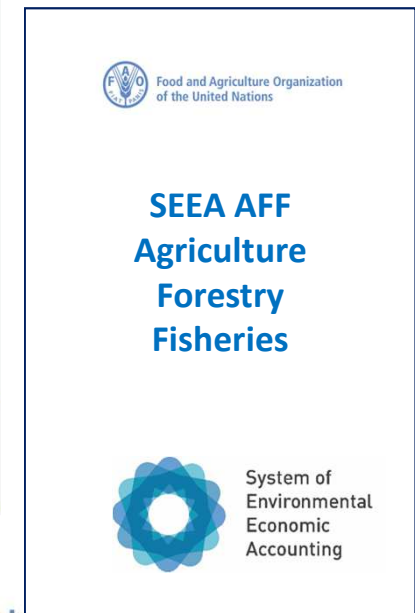
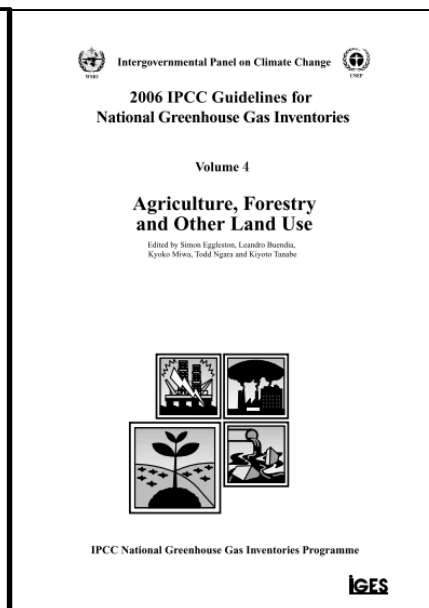
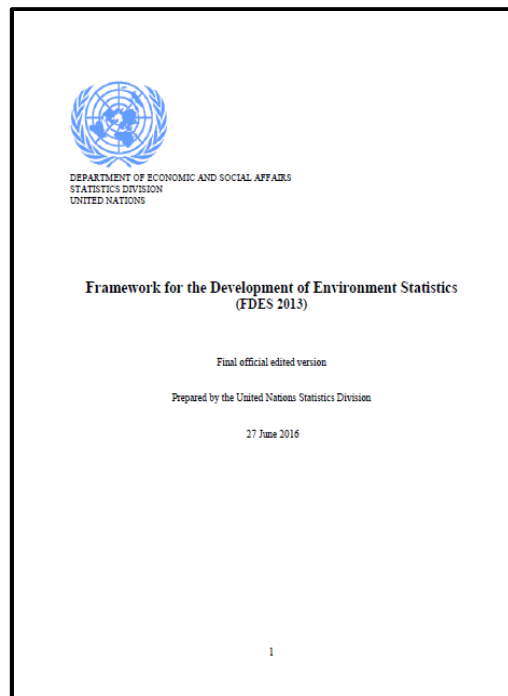
Energy Use

<http://www.fao.org/faostat/en/#data>



FAOSTAT Analytical Statistics: Estimates and Indicators based on core statistics and aligned with International Standards

- *Reference data products in support of National analysis and International Reporting (Climate Convention, SDGs, FDES, SEEA)*



Food and Agriculture Organization of the United Nations

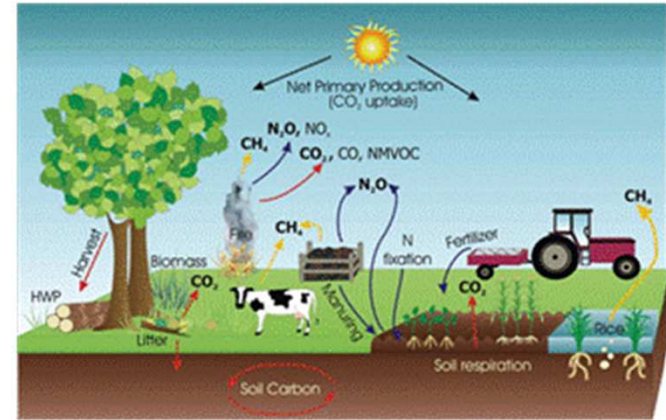
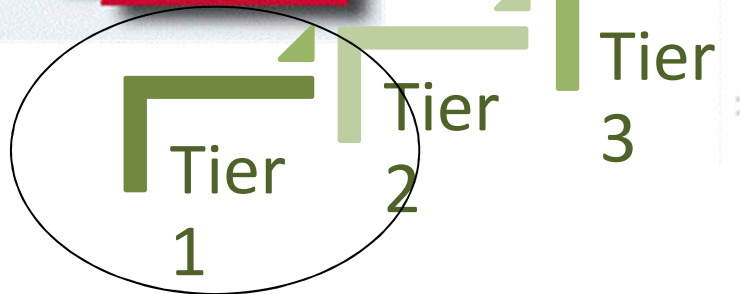
FAOSTAT Emissions Database: A reference Tier 1 Exercise



& geo-reference data



IPCC 2006 Guidelines



GHG Emissions Statistics: Categories

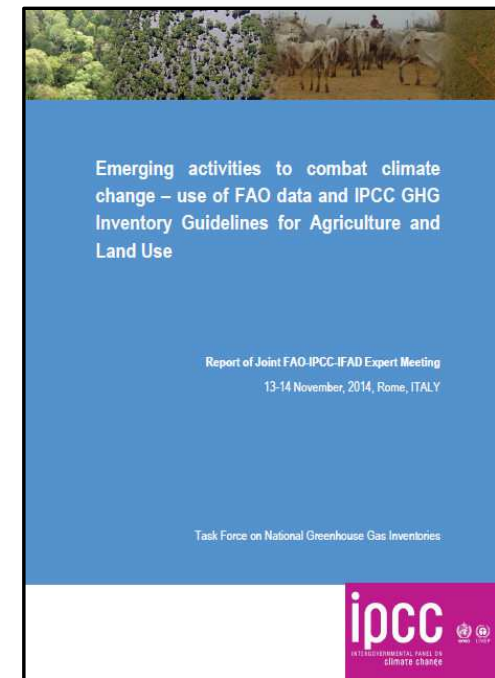
DOMAIN	CATEGORY	GAS	Data source	
Agriculture	Enteric Fermentation	CH ₄	FAOSTAT	
	Manure Management	CH ₄ , N ₂ O	FAOSTAT	
	Rice Cultivation	CH ₄	FAOSTAT	
	Agricultural soils	Synthetic Fertilizers	N ₂ O	FAOSTAT
		Manure applied to soils	N ₂ O	FAOSTAT
		Manure left on pasture	N ₂ O	FAOSTAT
		Crop residues	N ₂ O	FAOSTAT
		Cultivated organic soils	N ₂ O	FAOSTAT-Geospatial
	Burning - Savanna	CH ₄ , N ₂ O	FAOSTAT-Geospatial	
	Burning – Crop residues	CH ₄ , N ₂ O	FAOSTAT	

DOMAIN	CATEGORY	GAS reported	Data source
LULUCF	Forest land	CO ₂	FRA
	Cropland	CO ₂	FAOSTAT-Geospatial
	Grassland	CO ₂	FAOSTAT-Geospatial
	Burning Biomass	CH ₄ , N ₂ O, CO ₂	FAOSTAT-Geospatial
	Wetlands	CO ₂	
	Settlements	CO ₂	
	Other land	CO ₂	



FAO Statistical Work on GHG Emissions

- ❑ FAO database with estimates and updates GHG Emissions from AFOLU;
- ❑ 1961-2014 (Agriculture); 1990-2015 (LULUCF): ~185 Countries
- ❑ Reference **Tier 1** GHG Inventory using 2006 IPCC Guidelines:
 - ❖ Facilitate national, regional and global analysis, including IPCC Assessment Reports
 - ❖ Support member countries report under UNFCCC, addressing data gaps and needs in data QA/QC
 - ❖ Explore policy-relevant emission indicators in support of analyses linked to resilience, food security, including SDGs processes



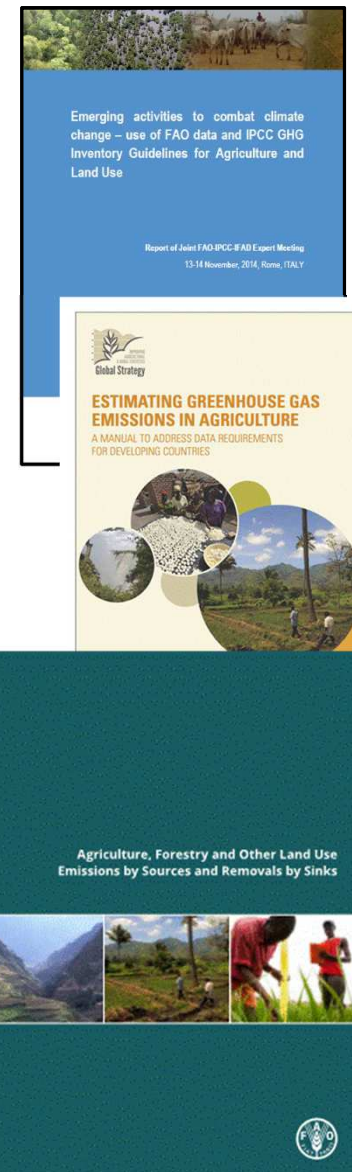
FAO emissions database: Addressing different data analysis needs

1. National, Regional and Global Assessments


Facilitate regional comparisons and trend analysis for AFOLU

2. **Fill data gaps and QA/QC procedures** Provide a reference, Tier 1 data framework for analysis of AFOLU GHG trends for all countries—EU 28 QA/QC in 2014 using FAOSTAT Emissions data

3. **Develop Indicators** Derive complex GHG indexes useful for analysis and policy support;

















FAOSTAT – FAO Statistical Database

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FIND YOUR STATISTICAL DATA BY EXPLORING FAOSTAT DATA DOMAINS. CLICK ON THE DOMAIN GROUPS BELOW

 Production	 Trade Browse ▶ Download ▶	 Food Balances	 Food Security
 Prices	 Investment	 Inputs	 Population
 Emissions - Agriculture	 Emissions - Land Use	 Agri-Environmental Indicators	 Forestry
 ASTI R&D Indicators	 Emergency Response		

[Rankings ▶](#)
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Highlights

Number of undernourished declining Millions of people



Year	Number of undernourished (Millions)
1991	1020
1992	1020
1993	1020
1994	1015
1995	1000
1996	980
1997	960
1998	950
1999	940
2000	935
2001	935
2002	950
2003	960
2004	970
2005	965
2006	950
2007	930
2008	910
2009	890
2010	870
2011	850
2012	830
2013	810
2014	800
2015	800

■ Number of undernourished declining

Database Updates


FEBRUARY 2016
Suite of Food Security Indicators - Food Security

Burning - Biomass - Emissions - Land Use

Land Use Total - Emissions - Land Use

Grassland - Emissions - Land Use

FAO Statistical Pocketbook 2015





This publication is part of the FAO Statistical Yearbook suite of products.


The first part of the book includes thematic spreads with data visualizations (graphs, charts, and maps) with basic text.

The second part has country-level

Featured Links

 Coming soon
KEY INDICATORS

 Download
FAOSTAT DATABASE
WITH ONE CLICK
(APPROX. 500Mb) 2016-02-03

 Explore
COUNTRY PROFILES

What's new in FAOSTAT?

FEBRUARY 2016
Emissions - Land Use.

Coming Up

FEBRUARY 2016
Production 2014 (Update).

OCTOBER 2015
Investment.

OCTOBER 2015
Fertilizers detailed and Trade value.

OCTOBER 2015

FAOSTAT database for AFOLU

The screenshot displays the FAOSTAT website interface. At the top, the FAO logo and 'FAOSTAT' text are on the left, and 'FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS STATISTICS DIVISION' and language options (ENGLISH, FRANÇAIS, ESPAÑOL) are on the right. A navigation bar includes 'HOME', 'BROWSE DATA', 'DOWNLOAD DATA', 'COMPARE DATA', 'SEARCH DATA', 'ANALYSIS', and 'METHODS & STANDARDS'. A search box is also present.

The 'Download' section is active, showing a list of 'FAOSTAT Domains' on the left, including 'Emissions - Agriculture' and 'Emissions - Land Use'. Two red circles highlight these categories. The 'Emissions - Agriculture' category lists: Agriculture Total, Enteric Fermentation, Manure Management, Rice Cultivation, Synthetic Fertilizers, Manure applied to Soils, Manure left on Pasture, Crop Residues, Cultivation of Organic Soils, Burning - Savanna, Burning - Crop Residues, and Energy Use. The 'Emissions - Land Use' category lists: Land Use Total, Forest Land, Cropland, Grassland, and Burning - Biomass. Below the lists are buttons for 'PREVIEW', 'CSV', and 'EXCEL'.

<http://www.fao.org/faostat/en/#data>

Indicators: Emissions by Sector

The screenshot shows the FAOSTAT website interface for the 'Emissions by sector' domain. The browser address bar shows 'www.fao.org/faostat/en/#data/EM'. The page header includes the FAO logo and navigation links. The main content area features a breadcrumb trail: 'Data > Country Indicators > Compare Data > Definitions and Standards > FAQ'. Below this, the 'Emissions by sector' page is displayed with a search bar and a 'Back to domains' button. The page is divided into four filter panels: 'COUNTRIES', 'ELEMENTS', 'ITEMS', and 'YEARS'. The 'COUNTRIES' panel lists countries like Afghanistan, Albania, Algeria, etc. The 'ELEMENTS' panel lists emission types such as 'Share of sector in total emissions', 'Share of sector in total CO2 emissions', etc. The 'ITEMS' panel lists categories like 'Energy (ener., man., cons & fugitive)', 'Transport', etc. The 'YEARS' panel lists years from 2010 to 2006. On the right, a sidebar titled 'Emissions by sector' provides a description of the data and a table of bulk download options.

Download Option	Size
All Data	2.79 MB
All Data Normalized	6.8 MB
All Area Groups	398 KB
Africa	612 KB
Americas	515 KB
Asia	547 KB
Europe	456 KB
Oceania	160 KB

Last Update
September 6, 2016

Indicators: Emission Intensities

Emissions intensities

[DOWNLOAD DATA](#)

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< [COUNTRIES](#) [REGIONS](#) [SPECIAL](#) >



Filter results

- Afghanistan
- Albania
- Algeria
- American Samoa
- Andorra
- Angola

Select All

Clear All

[ELEMENTS](#)

Filter results e.g. emission intensity

- Emission intensity
- Emissions (CO2eq)
- Production Quantity

Select All

Clear All

[ITEMS](#)

Filter results e.g. cereals excluding rice

- Cereals excluding rice
- Rice, paddy
- Meat, cattle
- Milk, whole fresh cow
- Meat, goat
- Milk, whole fresh goat

[YEARS](#)

Filter results e.g. 2014

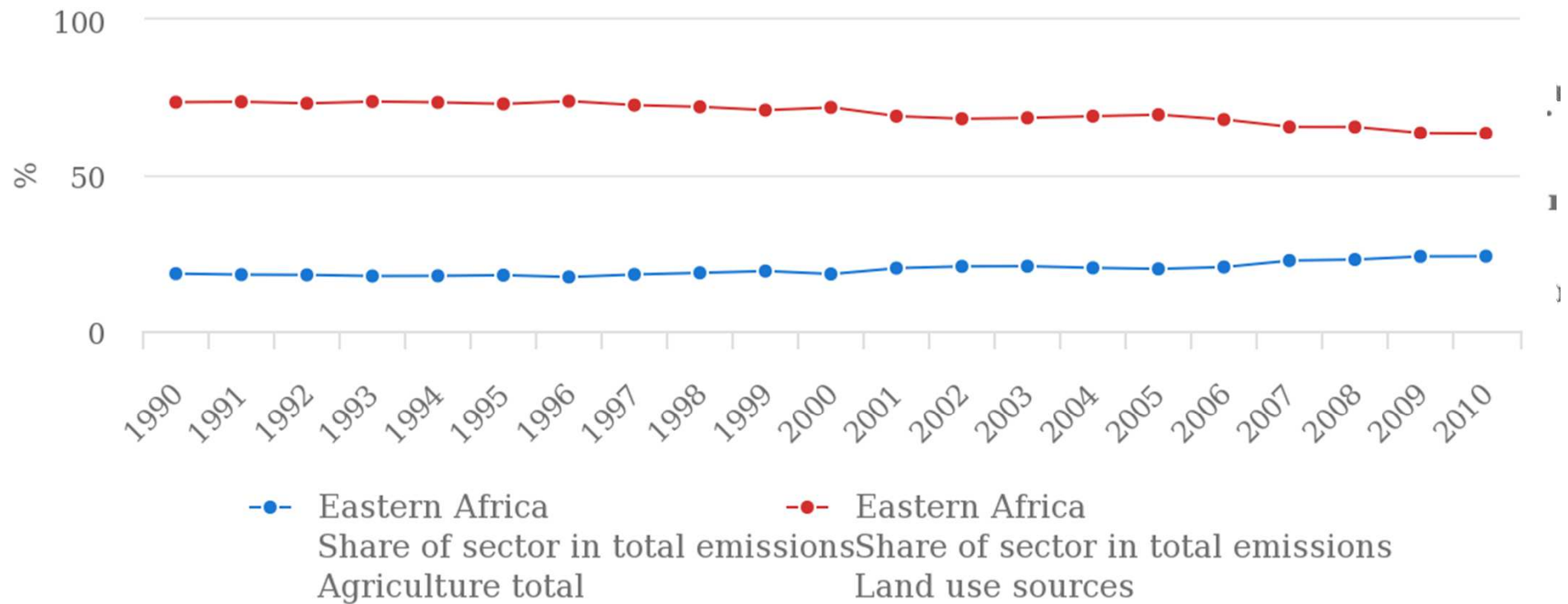
- 2014
- 2013
- 2012
- 2011
- 2010
- 2009

Examples of Data Analysis

Global and Regional Trends

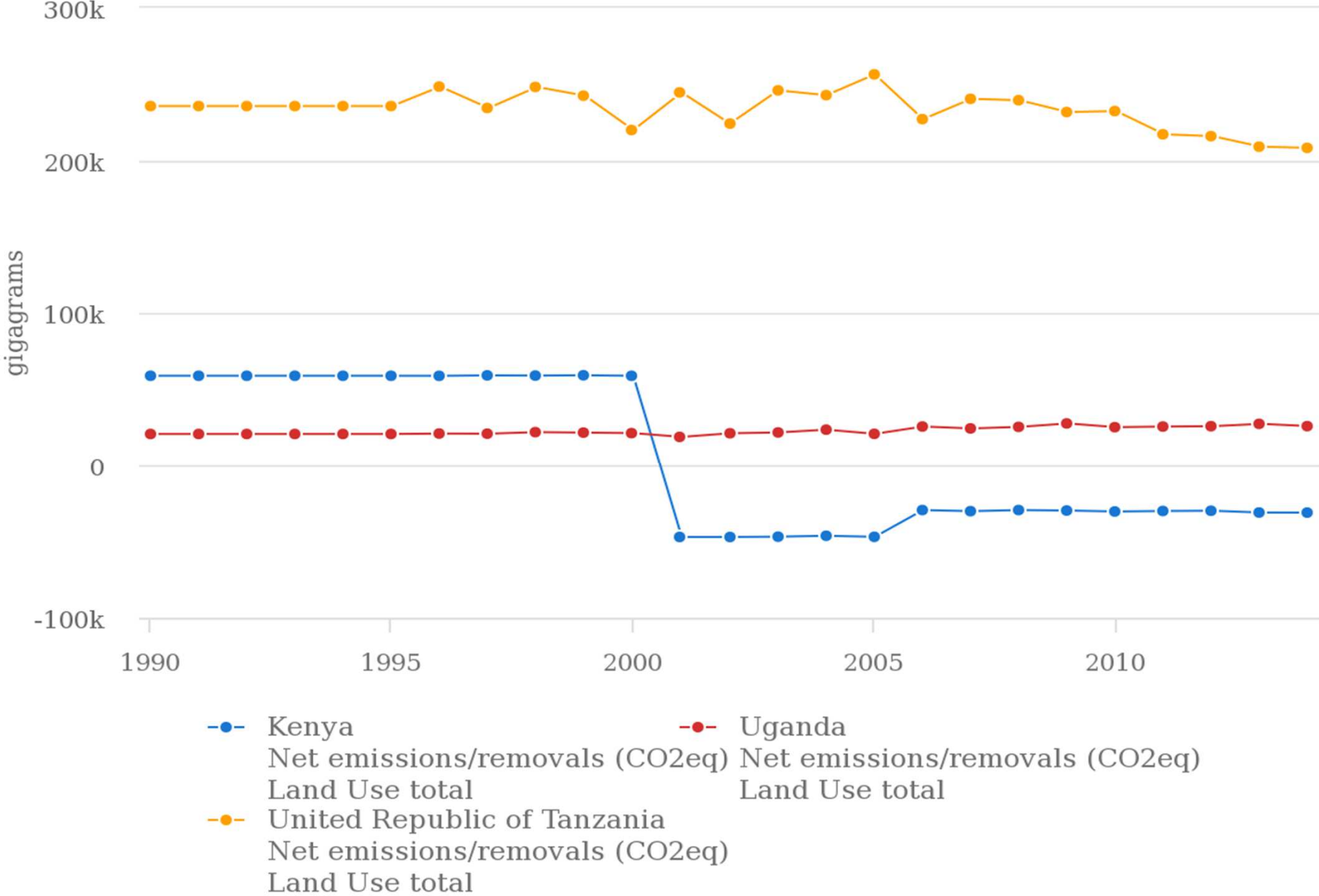
Shares of agricultural sectors in total GHG emissions

-- Eastern Africa + (Total), 1990 - 2010



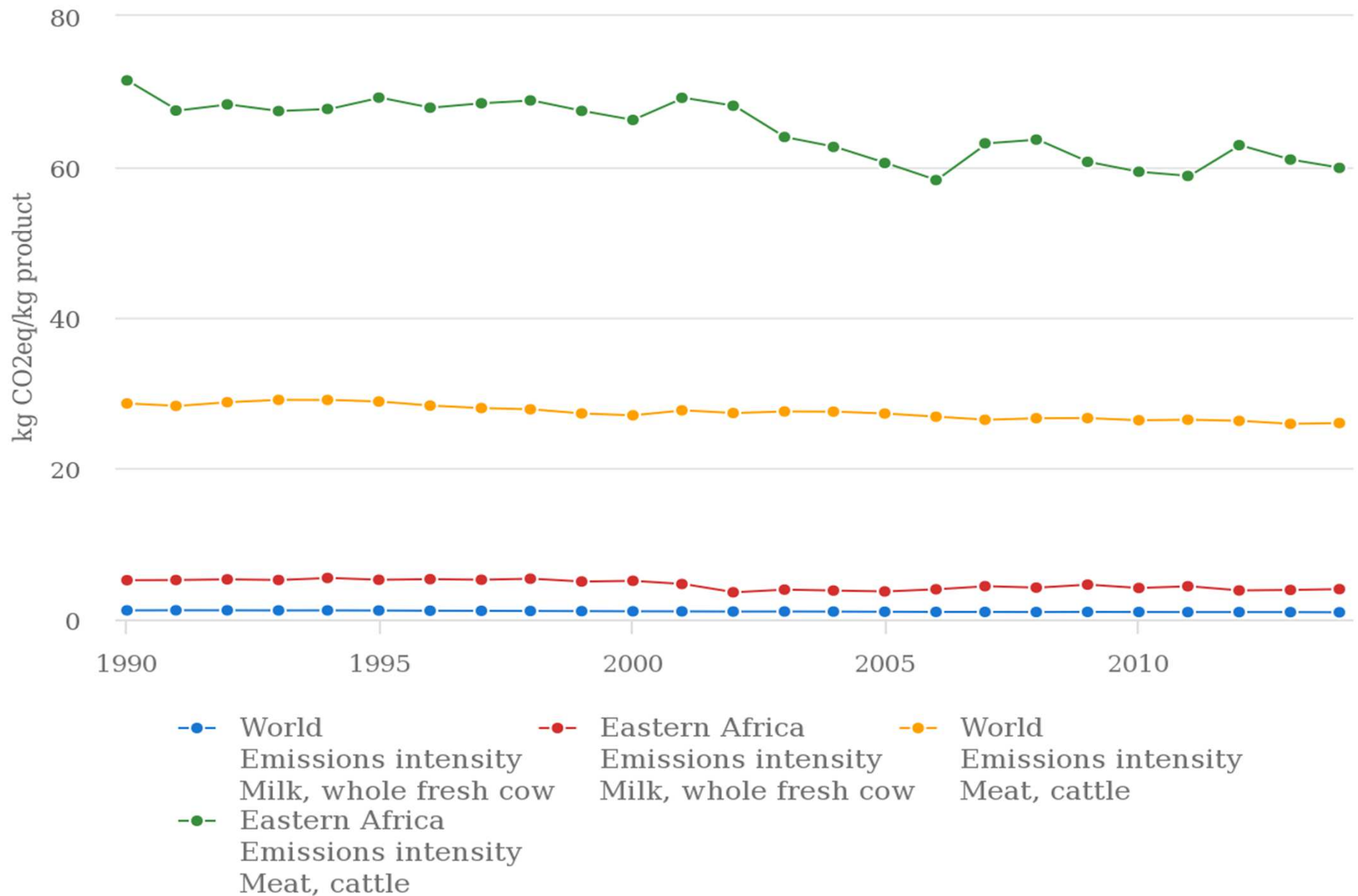
Source: FAOSTAT (Mar 30, 2017)
 Source: FAOSTAT (Mar 30, 2017)

National Trends: Emissions



Source: FAOSTAT (Mar 30, 2017)

Regional Trends: Emissions by Product



Metadata for the Emissions database (1)

Metadata / methodological notes available for download as pdf for all domains within the Emissions database (Agriculture and Land use)

Download Data/Emissions/Agriculture

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Download

FAOSTAT Domains

- Food Security
- Production
- Trade
- Food Balance
- Prices
- Inputs
- Population
- Investment
- Macro-Statistics
- Agri-Environmental Indicators
- Emissions - Agriculture**
 - Agriculture Total
 - Enteric Fermentation
 - Manure Management
 - Rice Cultivation
 - Synthetic Fertilizers
 - Manure applied to Soils
 - Manure left on Pasture
 - Crop Residues
 - Cultivation of Organic Soils
 - Burning - Crop Residues
 - Burning - Savanna
 - Energy Use

Metadata / Emissions - Agriculture

FAOSTAT data is organized in domains. Please find below the list of available domains for this group: select one of the boxes to access the data.

Agriculture Total Enteric Fermentation Manure Management Rice Cultivation Synthetic Fertilizers

Manure applied to Soils Manure left on Pasture Crop Residues Cultivation of Organic Soils Burning - Savanna

Burning - Crop Residues Energy Use

INDEX

- Agriculture Total
- Enteric Fermentation
- Manure Management
- Rice Cultivation
- Synthetic Fertilizers
- Manure applied to Soils
- Manure left on Pasture
- Crop Residues
- Cultivation of Organic Soils
- Burning - Crop Residues
- Burning - Savanna
- Energy Use

INDEX/e.g. Agriculture Total

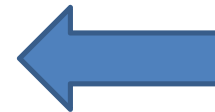
Metadata for the Emissions database (2)

Metadata available for download as pdf

Dataset Information:

Title	Agriculture Total
Abstract	<p>Agriculture Total contains all the emissions produced in the different agricultural emissions sub-domains, providing a picture of the contribution to the total amount of GHG emissions from agriculture. GHG emissions from agriculture consist of non-CO₂ gases, namely methane (CH₄) and nitrous oxide (N₂O), produced by crop and livestock production and management activities. Computed at Tier 1 following IPCC Guidelines for National GHG Inventories; available by country, with global coverage and annual updates. The time period of available estimates is 1961-2014, except for "cultivation of organic soils" and "burning – savanna" that start in 1990. Accordingly, the composition of the items aggregated "Agriculture total" and "Agriculture soils" depends on the items available for each year. Projections are also available, for 2030 and 2050, based on a baseline defined as the 2005-2007 average of the corresponding FAOSTAT activity data and on the percentage growth rates from FAO perspective studies (Alexandratos and Bruinsma, 2012) (with the exception of "cultivation of organic soils" and "burning – savanna", for which projections are set as a constant, estimated as the average of the period 1996-2014).</p>
Supplemental	<p>This domain contains data on GHG emissions and shares on the total GHG emissions from the different agricultural sub-domains.</p> <p>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.</p>
International Standards	<p>The FAOSTAT Agriculture Total domain is compliant with the System of Environmental-Economic Accounting Central Framework (SEEA CF) in terms of:</p> <ol style="list-style-type: none">Definitions: air emissions as defined in the SEEA CF: "<i>Emissions to air are gaseous and particulate substances released to the atmosphere by establishments and households as a result of production, consumption and accumulation processes</i>" (Chapter 3.6 Physical flow accounts for materials, Paragraph 3.6.3, Accounting for air emissions), are compliant with those computed and reported by FAO;Classifications: it follows the International Standard Industrial Classification of All Economic Activities (ISIC); andApplicability: data can be used to compile the SEEA CF Table 3.7, "<i>Air emissions account</i>" and the SEEA AFF Table 4.5 "<i>Physical flow account for air emissions</i>". <p>The FAOSTAT Agriculture Total domain is compliant with the Framework for the Development of Environmental Statistics (FDES 2013) as Emissions to Air of Carbon dioxide (CO₂), Methane (CH₄) and Nitrous Oxide (N₂O) are included in FDES Component 3, <i>Residuals</i>. Furthermore air emissions data are defined by FDES as Core set/ Tier 1 statistics. (FDES, Table 4.2, "<i>The Core Set of Environmental Statistics</i>").</p>

Data and associated metadata are yearly updated based on the release calendar



CAPACITY DEVELOPMENT

Country work based on national statistics and FAOSTAT Emissions database in support of sustainable inventories:

- Gap filling and trend analysis
- Quality Control, Quality Assurance of GHG Inventories
- IPCC Report and Guidelines



Conclusions

- Availability of a global greenhouse gas emission database by country, in line with international standards (FDES, IPCC, SEEA)
- A tool for national, regional, global analysis and in support member countries GHG Inventory needs
- Possibility of direct work with member countries and regional agencies via trainings, workshops, assistance
- Opportunity to build linkages with reporting of relevance to both Climate Convention and SDG process





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THANK YOU !

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<http://www.fao.org/economic/ess/environment/en/>