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 DEVELOMENT***

Emissions

Emissions - Land Use

Land Use Total

Forest Land

Cropland

Grassland

Burning - Biomass

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

Emissions - Agriculture

Agriculture Total

Enteric Fermentation

Manure Management

Rice Cultivation

Synthetic Fertilizers

Manure applied to Soils

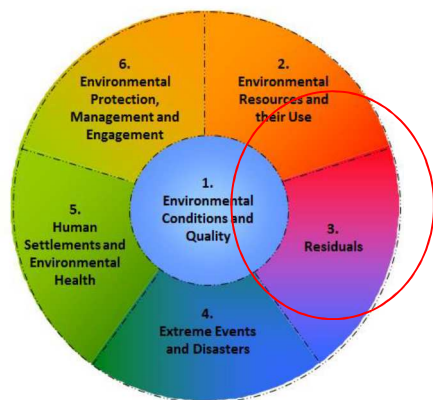Manure left on Pasture

Crop Residues

Cultivation of Organic Soils

Burning - Savanna
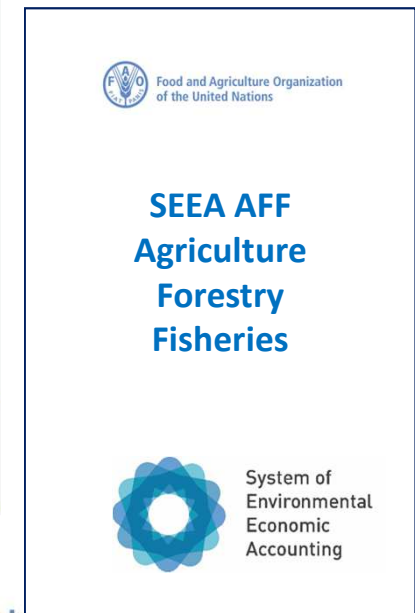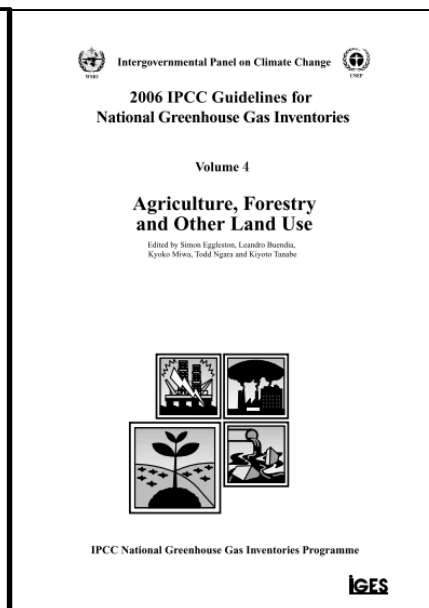
Burning - Crop Residues

Energy Use

CO_2
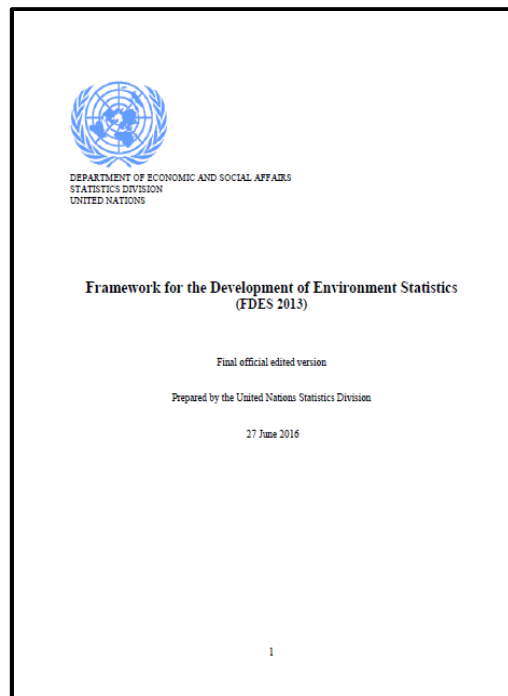
FAOSTAT Analytical Statistics: Estimates and Indicators based on core statistics and aligned with International Standards

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

FAOSTAT Emissions Database:
A reference Tier 1 Exercise
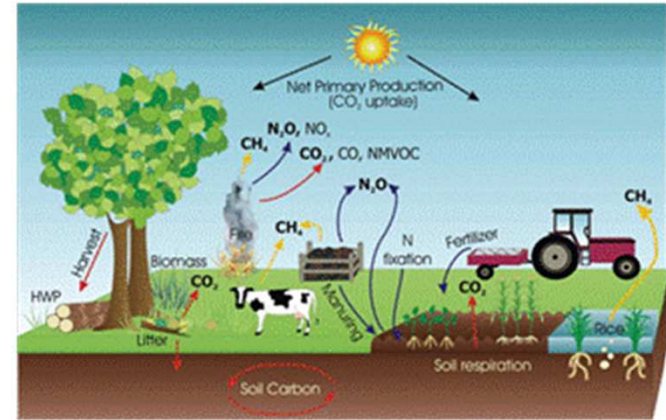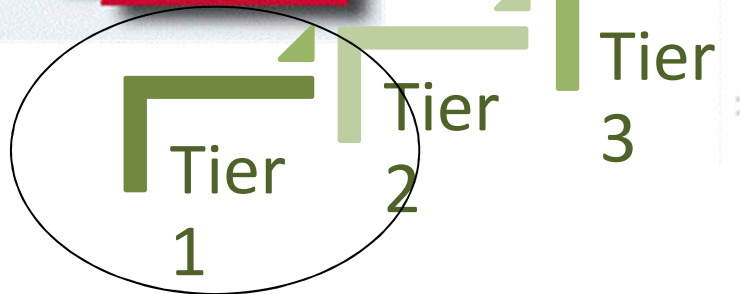
GHG Emissions Statistics: Categories

DOMAIN	CATEGORY		GAS	Data source
Agriculture	Enteric Fermentation		CH_4	FAOSTAT
	Manure Management		CH_4, N_2O	FAOSTAT
	Rice Cultivation		CH_4	FAOSTAT
	Agricultural soils	Synthetic Fertilizers	N_2O	FAOSTAT
		Manure applied to soils	N_2O	FAOSTAT
		Manure left on pasture	N_2O	FAOSTAT
		Crop residues	N_2O	FAOSTAT
		Cultivated organic soils	N_2O	FAOSTAT-Geospatial
	Burning - Savanna		CH_4, N_2O	FAOSTAT-Geospatial
	Burning – Crop residues		CH_4, N_2O	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_2O, 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

Emerging activities to combat climate change – use of FAO data and IPCC GHG Inventory Guidelines for Agriculture and Land Use

Report of Joint FAO-IPCC-IFAD Expert Meeting
13-14 November, 2014, Rome, ITALY

Task Force on National Greenhouse Gas Inventories

ipcc
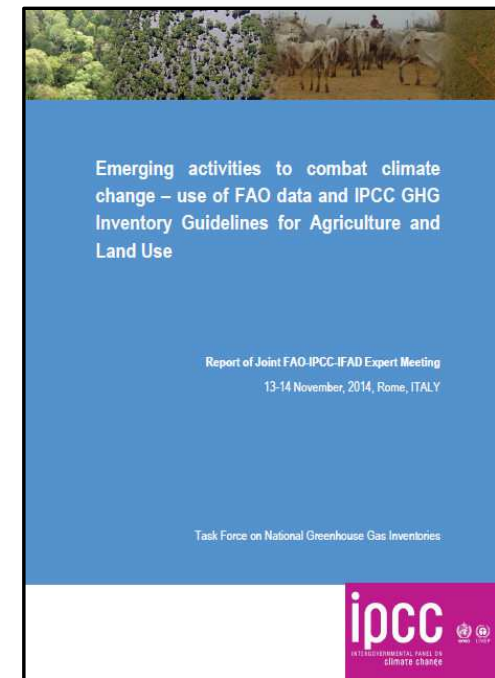
FAO emissions database: Addressing different data analysis needs

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;

Emerging activities to combat climate change – use of FAO data and IPCC GHG Inventory Guidelines for Agriculture and Land Use

Report of Joint FAO-IPCC-IFAD Expert Meeting
13-14 November, 2014, Rome, ITALY

Global Strategy

ESTIMATING GREENHOUSE GAS EMISSIONS IN AGRICULTURE
A MANUAL TO ADDRESS DATA REQUIREMENTS FOR DEVELOPING COUNTRIES

Agriculture, Forestry and Other Land Use
Emissions by Sources and Removals by Sinks

FAOSTAT – FAO Statistical Database

FAOSTAT database for AFOLU

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

Indicators: Emissions by Sector

Indicators: Emission Intensities

Examples of Data Analysis

Global and Regional Trends

Shares of agricultural sectors in total GHG emissions

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

-•- Eastern Africa		-•- Eastern Africa
Share of sector in total emissions		Share of sector in total emissions
Agriculture total		Land use sources
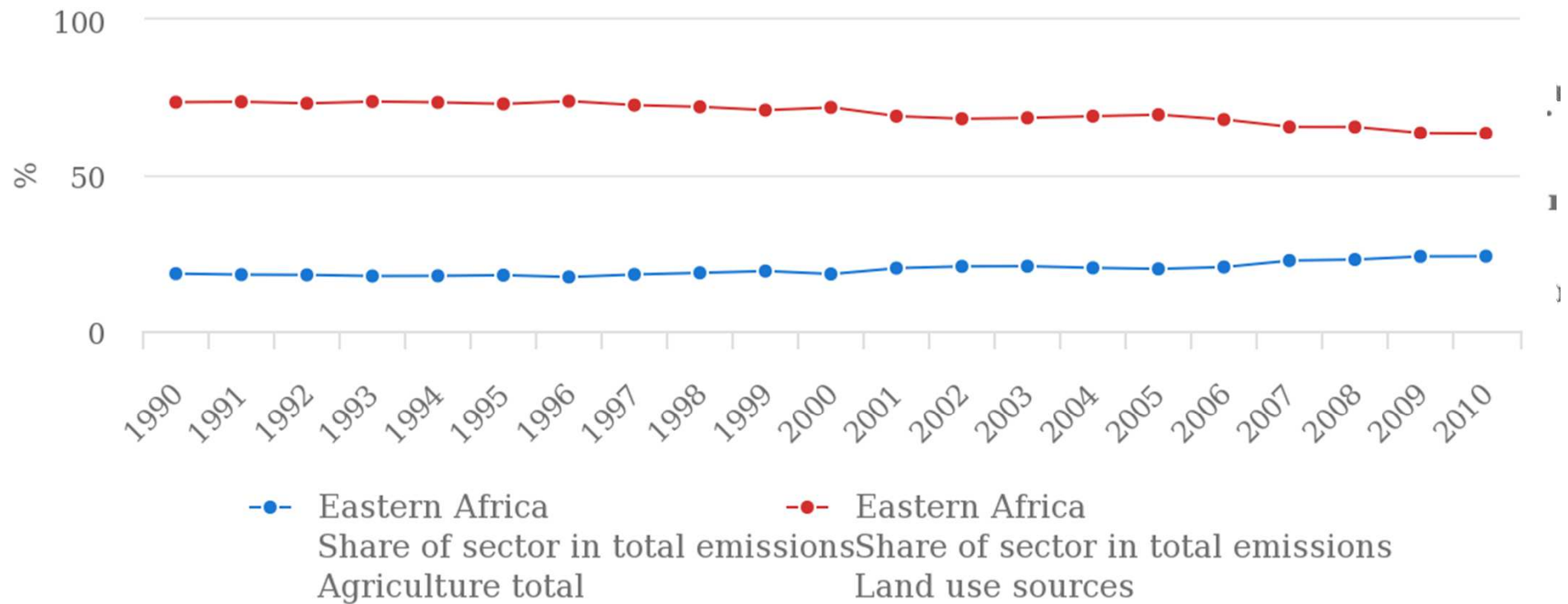
National Trends: Emissions
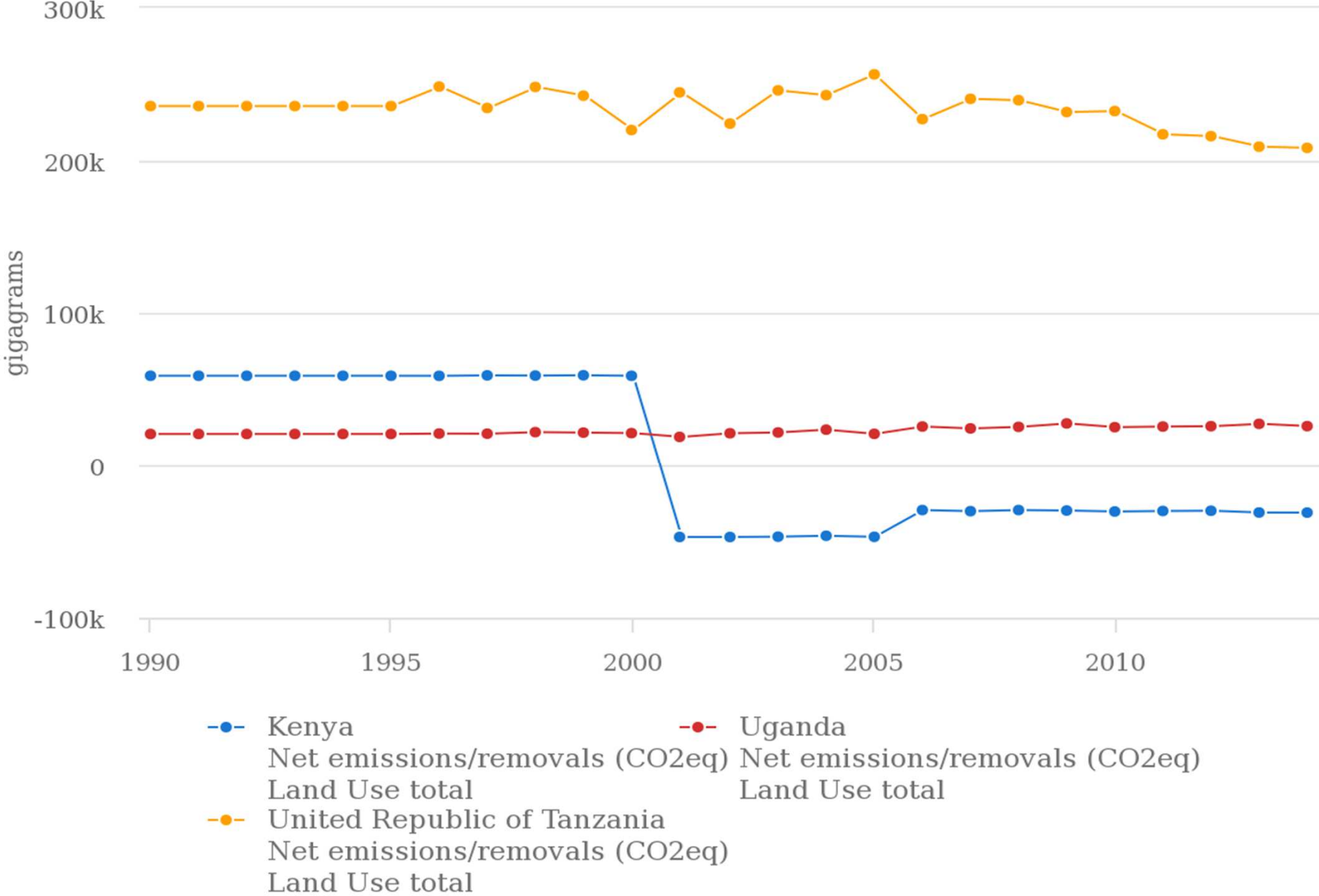
Source: FAOSTAT (Mar 30, 2017)

Regional Trends: Emissions by Product

Source: FAOSTAT (Mar 30, 2017)
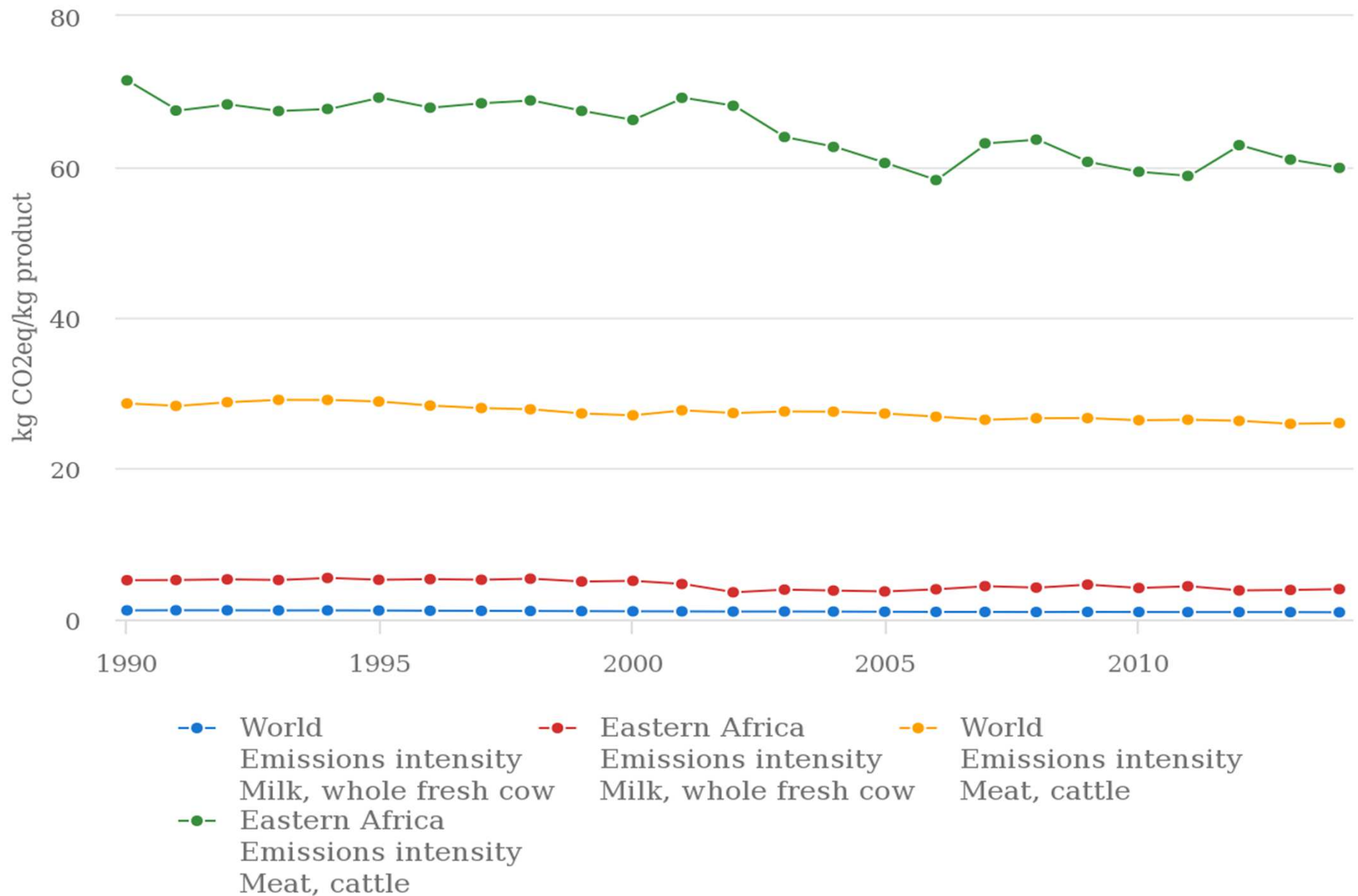
Metadata for the Emissions database (1)

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

INDEX/e.g. Agriculture Total

Metadata for the Emissions database (2)

Metadata available for download as pdf

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

Dataset Information:

Title	**Agriculture Total**
Abstract	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-CO_2 gases, namely methane (CH_4) and nitrous oxide (N_2O), 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).
Supplemental	This domain contains data on GHG emissions and shares on the total GHG emissions from the different agricultural sub-domains. 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.
International Standards	The FAOSTAT Agriculture Total domain is compliant with the **System of Environmental-Economic Accounting Central Framework** (SEEA CF) in terms of: i) Definitions: air emissions as defined in the SEEA CF: *"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"* (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; ii) Classifications: it follows the International Standard Industrial Classification of All Economic Activities (ISIC); and iii) Applicability: data can be used to compile the SEEA CF Table 3.7, *"Air emissions account"* and the SEEA AFF Table 4.5 *"Physical flow account for air emissions"*. 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 (CO_2), Methane (CH_4) and Nitrous Oxide (N_2O) are included in FDES Component 3, *Residuals*. Furthermore air emissions data are defined by FDES as Core set/ Tier 1 statistics. (FDES, Table 4.2, *"The Core Set of Environmental Statistics"*).
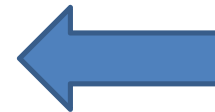
CAPACITY DEVELOPMENT

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

Food and Agriculture Organization of the United Nations

THANK YOU !

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