

Environment Statistics for evidence-based decision making

Final Workshop on Environment Statistics for the East African Community Region
Arusha, Tanzania 23 – 27 October 2017

ENVIRONMENT Team
FAO STATISTICS DIVISION



Food and Agriculture Organization
of the United Nations

Outline

- FAOSTAT Core Agri-Environmental Statistics and Processes;
- FAOSTAT Analytical Agri-Environmental Statistics;
- FAOSTAT Agri-Environmental data in support of FDES statistics - Focus on EAC indicators;



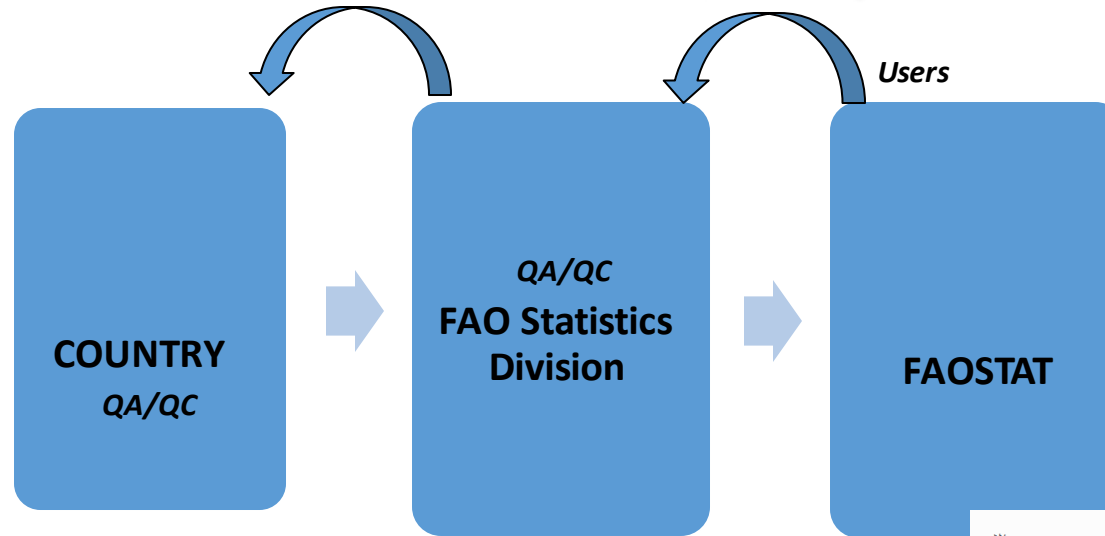
FAOSTAT Core Statistics

Annual Data Collection, Analysis and Dissemination

- Regulated by FAO Constitution – Statistics a core pillar of FAO; Member countries provide data relevant to agriculture and food security **via national focal points** (NSOs; Min Ag);
- FAO collects, analyses and disseminates national statistics in coordination with its member countries in support of **evidence-based decision making**;



FAOSTAT Core Statistics: Collection, Analysis and Dissemination



FERTILIZERS PESTICIDES LAND

<p>Purpose of the questionnaire</p> <p>This Fertilizer Questionnaire is designed to collect national and to forecast future requirements at the national and the regional level.</p> <p>Please complete or update the contact details of the national reporting office.</p>		<p>Reference Years: 2009-2014</p>	
<p>Reporter name:</p> <p>Title: _____</p> <p>Administration and Office: _____</p> <p>Address: _____</p> <p>Tel: _____ Fax: _____</p>		<p>National Reporting Office and Contact name</p> <p>Reporter name: _____</p> <p>Title: _____</p> <p>Administration and Office: _____</p> <p>Address: _____</p> <p>Tel: _____ Fax: _____ E-mail: _____ http:// _____</p>	
<p>Structure</p> <p>This questionnaire is composed of:</p> <p>Three introductory sections (Cover page, Fertilizers-Instructions, Two data reporting sections (1. Chemical fertilizers, 2. Organic fertilizers), Two supplementary information sections (3. Metadata, 4. Other information).</p>		<p>Questionnaire on Agricultural Resources Land use and Irrigation</p> <p>The Land and Irrigation Questionnaire has three major sections: Land use and Irrigation, Land use - plantations and Metadata.</p> <p>We have included detailed concepts and definitions of the land use categories in the Explanatory Notes sheet.</p> <p>Please include notes on any deviation from the concepts and definitions regarding the specific data requested.</p> <p>If your organization is not responsible for the data collection of one or more variables, we kindly ask you to indicate the contact detail of the organization responsible in the section "Land use - contact details".</p> <p>If you have any query regarding the questionnaire please contact: Mr Francesco Tubiello tel: (+39) 06 5705 2169 e-mail: Francesco.Tubiello@fao.org http://www.fao.org/statistics/en/</p>	
<p>We kindly ask you to provide a reply by: 02/Feb/2015</p>		<p>We kindly ask you to provide a reply by 02/Feb/2015</p>	

Food and agriculture data

- Production**
 - Crops
 - Crops processed
 - Live Animals
 - Livestock-Primary
 - Livestock-Processed
 - Production Indices
 - Value of Agricultural Production
- Inputs**
 - Fertilizers
 - Fertilizers archive
 - Fertilizers - Trade Value
 - Pesticides Use
 - Pesticides Trade
 - Land Use
 - Employment 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 - Savanna
 - Burning - Crop Residues
 - Energy Use
- Trade**
 - Crops and livestock products
 - Live animals
 - Detailed trade matrix
 - Trade Indices
- Population**
 - Annual population
- Investment**
 - Machinery
 - Machinery Archive
 - Government Expenditure
 - Credit to Agriculture
 - Development Flows to Agriculture
 - Foreign Direct Investment (FDI)
 - Country Investment Statistics Profile
- Emissions - Land Use**
 - Land Use Total
 - Forest Land
 - Cropland
 - Grassland
 - Burning - Biomass
- Food Balance**
 - Food Balance Sheets
 - Commodity Balances - Crops Primary Equivalent
 - Commodity Balances - Livestock and Fish Primary Equivalent
 - Food Supply - Crops Primary Equivalent
 - Food Supply - Livestock and Fish Primary Equivalent
- Food Security**
 - Indicators from Household Surveys (gender, area, socioeconomic)
 - Suite of Food Security Indicators
- Macro-Statistics**
 - Capital Stock
 - Macro Indicators
- Forestry**
 - Forestry Production and Trade
 - Forestry Trade Flows
- ASTI R&D Indicators**
 - ASTI-Researchers
 - ASTI-Expenditures
- Prices**
 - Producers Prices - Annual
- Agri-Environmental Indicators**
 - Air and climate change
 - Energy
 - Fertilizers
- Emergency Response**

Ongoing revision of data collection processes

- Reduce burden on countries;
- Fertilizers questionnaire revised in 2016 – Land use under revision (aligned with the SEEA and WCA 2020) – approx. 40% less questions;
- Foster national coordination;
- Reconciled list of focal points;
- Enhancing coherence in national statistics - joint mailing out;



Focal Points – National Institutions and Departments

	FERTILIZERS	LAND	PESTICIDES
Burundi	Ministère de la Planification - Institut de Statistiques et d'Études Économiques (ISTEEBU)	Institut géographique du Burundi (IGEBU)	Ministère de l'Agriculture et de l'Élevage - Département de la Protection des Végétaux
Kenya	Kenya National Bureau of Statistics		Pest Control Products Board
Rwanda	Ministère des Finances et de la Planification Économique - Institut National de la Statistique		Ministry of Agriculture - Rwanda Agriculture Board (RAB)
Uganda	Uganda Bureau of Statistics	Uganda Bureau of Statistics - Statistical Production and Development	Ministry of Agriculture, Animal Industry and Fisheries - Department of Crop Protection
United Republic of Tanzania	National Bureau of Statistics		Ministry of Agriculture & Food Security - Plant Health Services
South Sudan	National Bureau of Statistics		

RESPONSE STATISTICS: FERTILIZERS

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Burundi	0	0	0	0	0	0	0	0	On-going
Kenya	0	0	0	0	0	0	0	1	
Rwanda	0	0	0	0	0	0	Not sent	Not sent	
Uganda	0	0	0	0	0	0	0	1	
United Republic of Tanzania	0	0	0	0	0	1	0	0	
South Sudan			0	0	0	0	1	0	

Year of data collection 1 = Response received 0 = Questionnaire sent, no response



RESPONSE STATISTICS: PESTICIDES

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Burundi	1	1	0	0	1	0	0	No data collection	On-going
Kenya	0	0	0	0	0	0	0		
Rwanda	0	0	1	1	1	1	1		
Uganda	0	0	0	0	0	0	0		
United Republic of Tanzania	0	0	0	0	0	0	0		
South Sudan			Not sent	0	0	0	0		

Year of data collection 1 = Response received 0 = Questionnaire sent, no response



RESPONSE STATISTICS: LAND USE

	2009	2010	2011	2012	2013	2014	2015	2016	2017
Burundi	0	0	0	0	0	0	0	No data collection	On-going
Kenya	0	1	0	0	0	0	0		
Rwanda	0	0	0	0	1	0	0		
Uganda	0	0	0	0	0	0	0		
United Republic of Tanzania	0	0	0	0	0	0	0		
South Sudan			0	0	0	0	0		

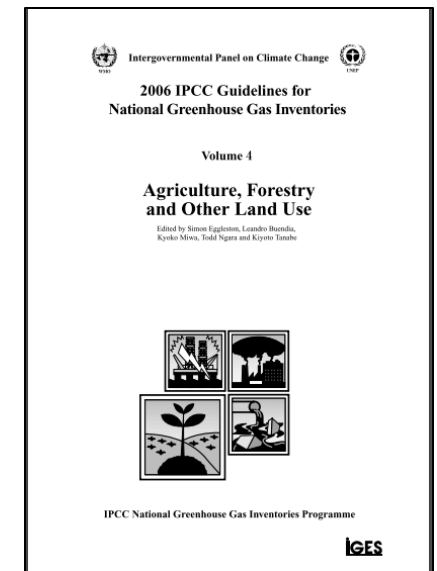
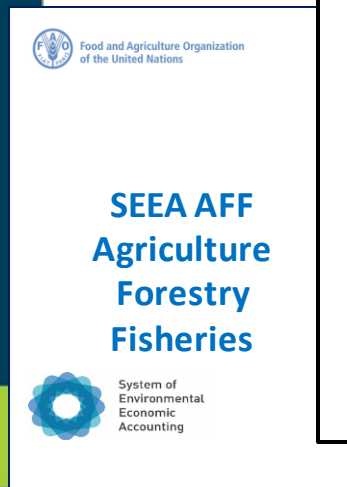
Year of data collection 1 = Response received 0 = Questionnaire sent, no response



Agri-environmental analytical statistics

- Based on Core Statistics;
- Aligned to International Standards;
- Reference data products for National and International Analyses and Reporting processes;

UN SEEA and SEEA AFF; UN FDES;
SDGs and 2030 Development Agenda; Climate Convention



FAOSTAT Analytical Data and Indicators

- **GHG Emissions** from *Agriculture, Forestry and Other Land Use: Carbon Stock Change; Deforestation, Degradation; Peatland; Fire Statistics*;
- **Agri-Environmental Indicators** (aligned with Eurostat and OECD);
- **Climate Change Relevant Statistics** (*Emissions Intensity and by Sector; Temperature Change; Land Cover*);



FAOSTAT Analytical Environment Statistics - Global default estimates



& geo-spatial data

+

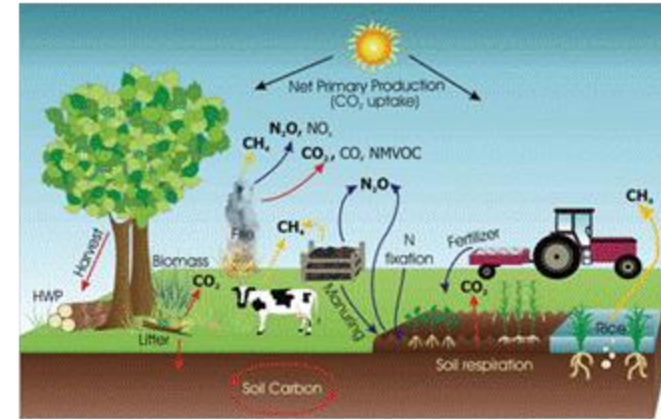
SDG Methods



IPCC 2006 Guidelines



=



Food and Agriculture Organization of the United Nations

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

FAOSTAT Agri-Environmental Indicators



Agri-Environmental Indicators

Air and climate change

Energy

Fertilizers

Land Use

Land Cover

Livestock Patterns

Pesticides

Soil

Water

Emissions by sector

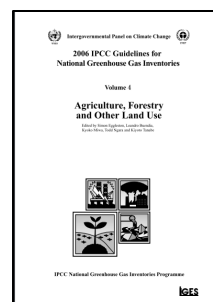
Emissions intensities

Temperature change

• Air and Climate	% Ag. NH ₃	1980-2009
• Energy	Bioenergy, Ag. Use	1971-2009
• Soil	% C, degrad., erosion	1991 & 2008
• Water	% ag. withdrawals	1961-2010
• Fertilizers	Kg/ha on cropland	2002-2014
• Pesticides	Kg/ha on cropland	1990-2014
• Livestock Patterns	% LTU	1961-2014
• Land Use	Share over land area	1961-2014
• Land Cover	ha	1990-2015
• Climate Change	GHG, Temp Change	1961-2015



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EUROSTAT/OECD/FAO AEI, 2011

FAOSTAT Environment Statistics in support of FDES components – EAC Environment Indicators

6 components:

- i. Environmental conditions and quality*
- ii. Environmental resources and their use*
- iii. Residuals*
- iv. Extreme events and disasters*
- v. Human settlements and environmental health*
- vi. Environmental protection, management and engagement*



Residuals – Release of chemical substances

- Priority area: Use of pesticides
- Indicator: Use of agricultural pesticides per unit of agricultural land
- FDES Statistics: **3.4.1.b Total amount of pesticides used** (FAOSTAT RP – pesticides by type);
- Corresponding: derived from FAOSTAT RP – pesticides by type) and in FAOSTAT domain EP “Average (pesticides) use per area of cropland” ;
- **Relevant to SDG 2.4.1:** Proportion of agricultural area under productive and sustainable agriculture.

Inputs

Pesticides Use

The Pesticides Use database includes data on the use of major pesticide groups (Insecticides, Herbicides, Fungicides, Plant growth regulators and... [Show More](#)

Food and Agriculture Organization of the United Nations (FAO)

Bulk Downloads

All Data	144 KB
All Data Normalized	312 KB
Africa	24 KB
Americas	32 KB
Asia	35 KB
Europe	53 KB
Oceania	6 KB

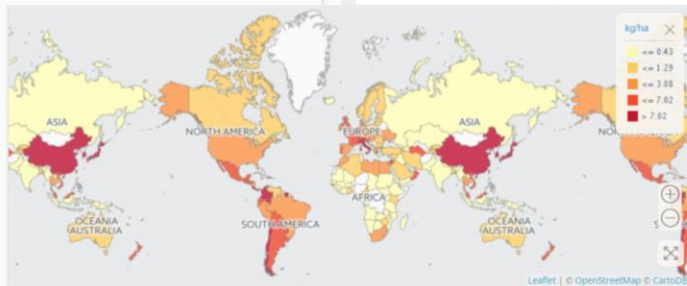
Last Update
September 5, 2017

Related Documents

- Country Notes
- README Domain Information

Definitions and standa...

Metadata



AEIndicators

Pesticides

The data describe the average use of pesticides per area of cropland (arable land and permanent crops) at national level in a time series from 1990 to... [Show More](#)

Food and Agriculture Organization of the United Nations (FAO)

Bulk Downloads

All Data	9 KB
All Data Normalized	18 KB
Africa	2 KB
Americas	3 KB
Asia	3 KB
Europe	3 KB
Oceania	1 KB

Last Update
July 6, 2017

Related Documents

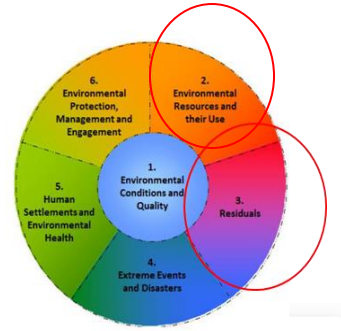
README_Methodological_Note

Definitions and standa...

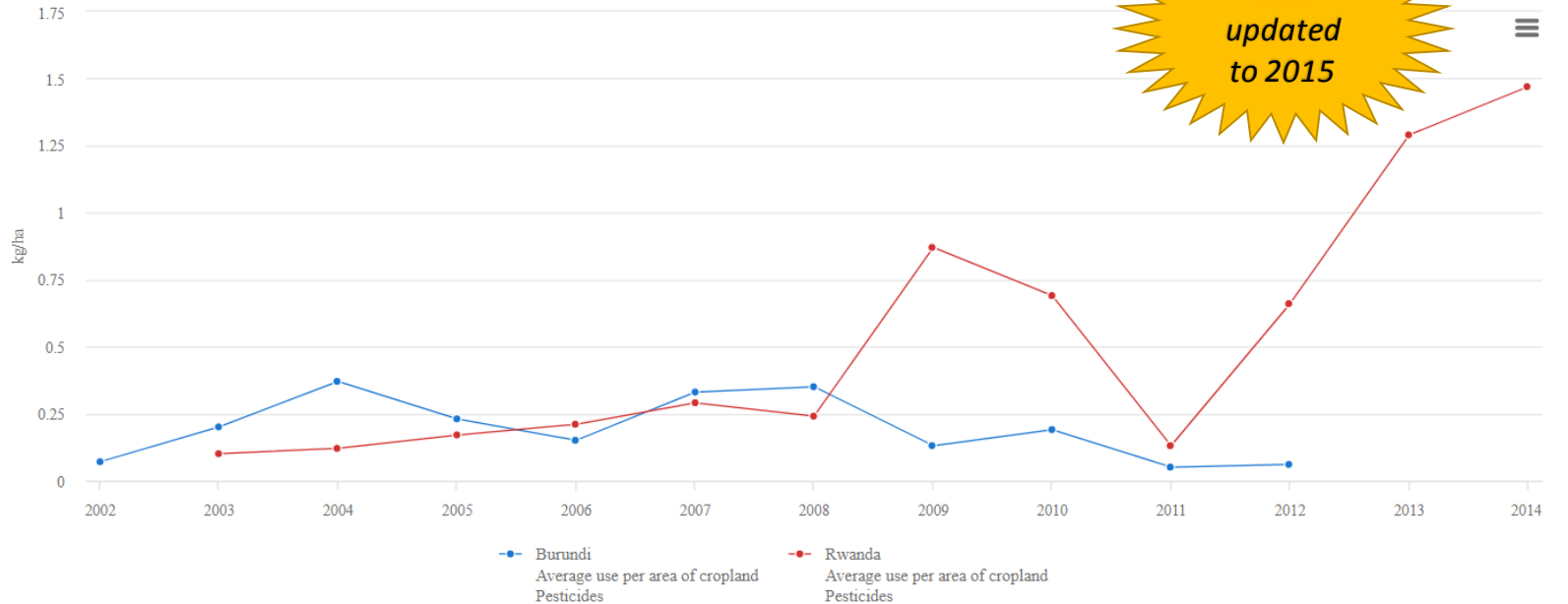
Aggregation

Average

Pesticides



Timeseries on selected data



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

Residuals – Release of chemical substances

- Priority area: Use of fertilizers
- Indicator: Use of (**inorganic**) fertilizers per unit of agricultural land
- FDES Statistics: **3.4.1.a.2 & 2.5.3.b.2 Amount used of chemical fertilizers**
- Corresponding: derived from FAOSTAT RF – fertilizers by type) and in FAOSTAT domain EF “Average (fertilizers) use per area of cropland”;
- **Relevant to SDG 2.4.1:** Proportion of agricultural area under productive and sustainable agriculture.



Inputs

Fertilizers

The Fertilizers dataset contains information on the Production, Trade, Agriculture Use and Other Uses of chemical and mineral fertilizers products... [Show More](#)

Food and Agriculture Organization of the United Nations (FAO)

Bulk Downloads

All Data	451 KB
All Data Normalized	1.44 MB
All Area Groups	22 KB
Africa	90 KB
Americas	84 KB
Asia	110 KB
Europe	123 KB
Oceania	21 KB

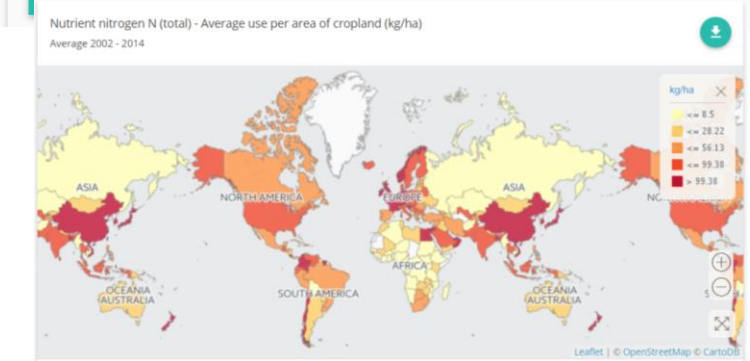
Last Update
November 10, 2016

Related Documents

[Fertilizers](#)

[Definitions and standa...](#)

Item: Nutrient nitrogen N (total) | Country/Region: World - (Total) | From Year: 2002 | To Year: 2014 | Aggregation: Average



AE Indicators

Fertilizers

The data describe the average use of chemical and mineral fertilizers per area of cropland (arable land and... [Show More](#)

Food and Agriculture Organization of the United Nations (FAO)

Bulk Downloads

All Data	28 KB
All Data Normalized	66 KB
All Area Groups	5 KB
Africa	6 KB
Americas	5 KB
Asia	7 KB
Europe	7 KB
Oceania	2 KB

Last Update
July 6, 2017

Related Documents

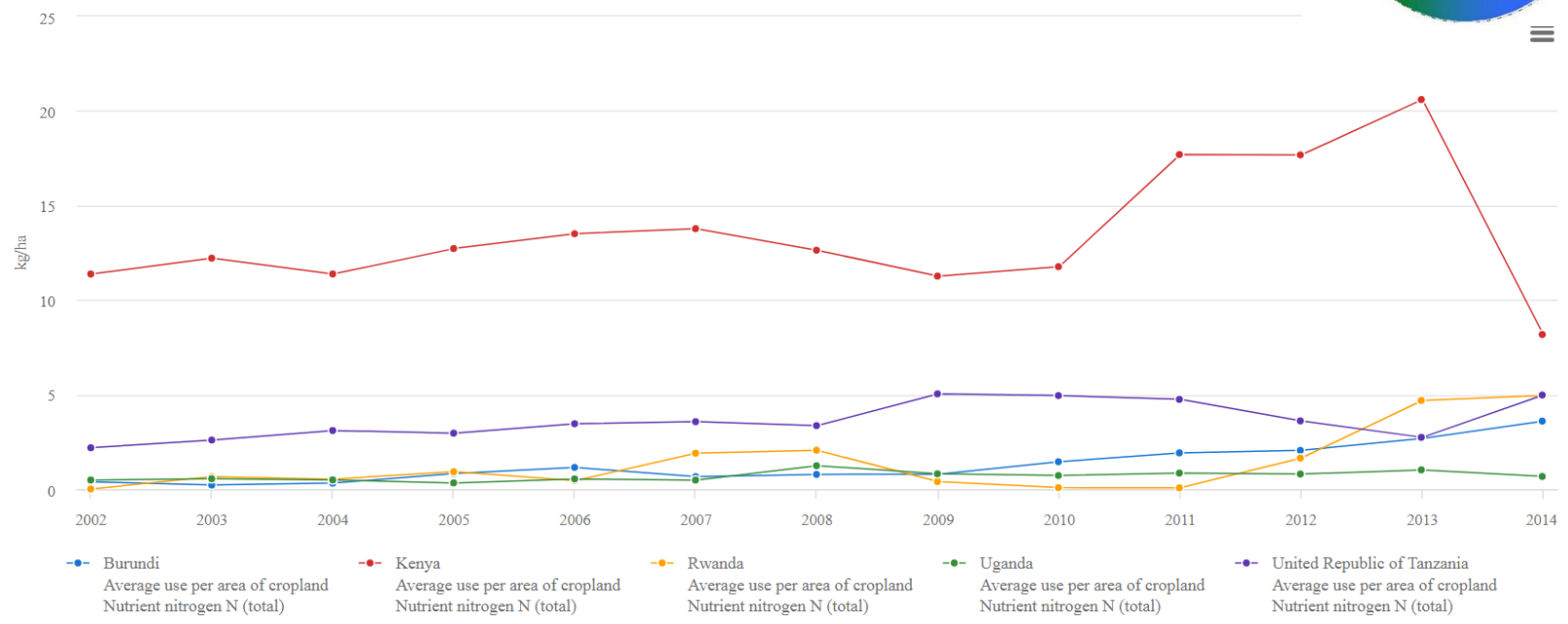
[README_Methodological_Note](#)

[Definitions and standa...](#)

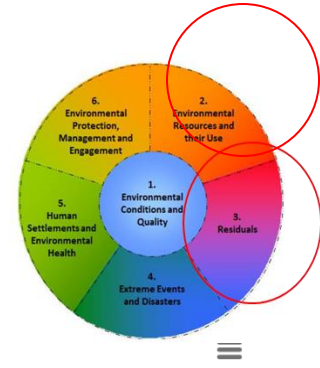
Fertilizers

Results

Timeseries on selected data



Forthcoming update to 2015

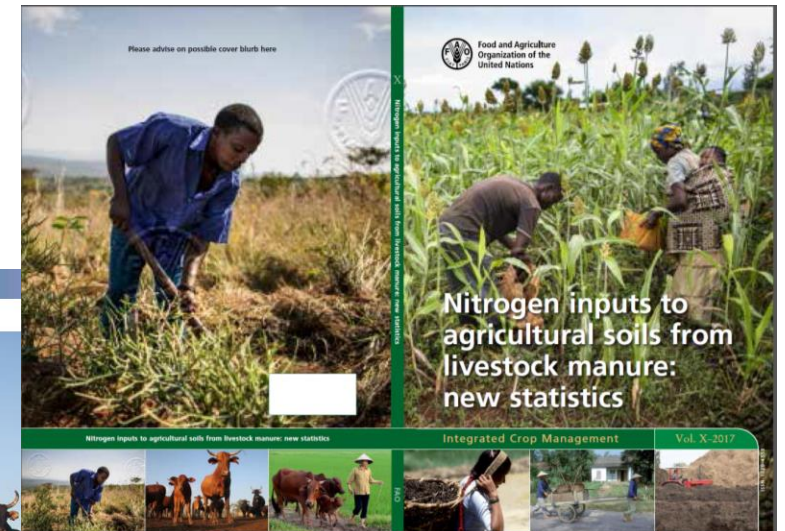


<http://www.fao.org/faostat/en/#compare>

Residuals – Release of chemical substances

- Indicator: Use of (**organic**) fertilizers per unit of agricultural land
- FDES Statistics: **3.4.1.a.1 & 2.5.3.b.1 Amount used of natural fertilizers** (e.g. **manure**, compost, lime);
 - Report soon to be released (FAO AGP and AGAL);
 - Capacity development (Dec 2015);
 - **Manure (N content);**
 - Data from FAOSTAT domains.

Statistics



International workshop on statistics on N input from livestock manure: Estimating availability and use

<http://www.fao.org/economic/ess/ess-events/ninputs/en/>

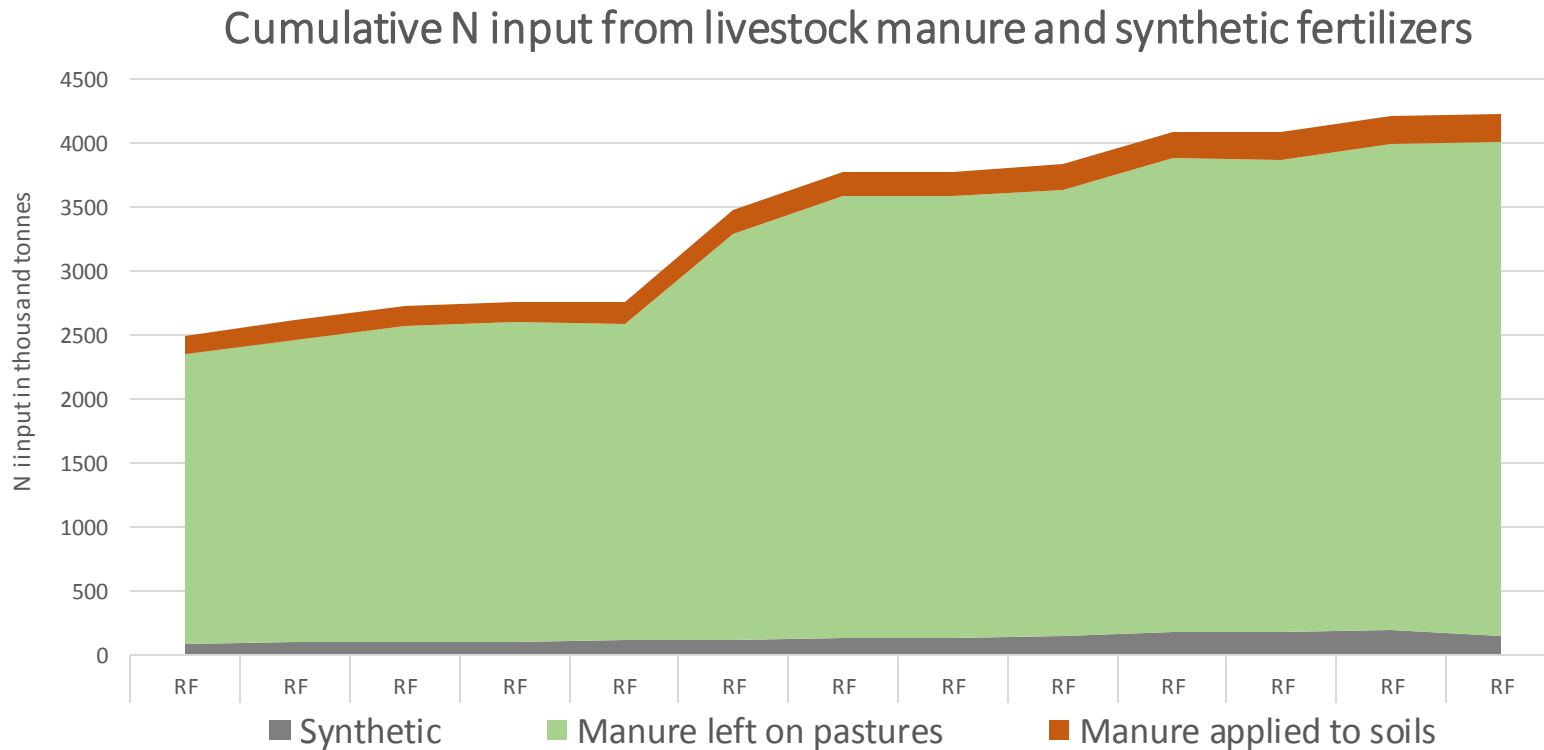
30 November 2015, Kigali, Rwanda

The Statistics Division (SD) of the Agricultural Production and Plant Production and Statistics Service (APPS)



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FAOSTAT Domains: **N content in manure** : Emissions – Agriculture: Manure applied to Soils; Manure Management; Manure left on Pasture



Compiled for EAC countries:
 Burundi,
 Kenya,
 Rwanda,
 Uganda,
 United Republic of Tanzania

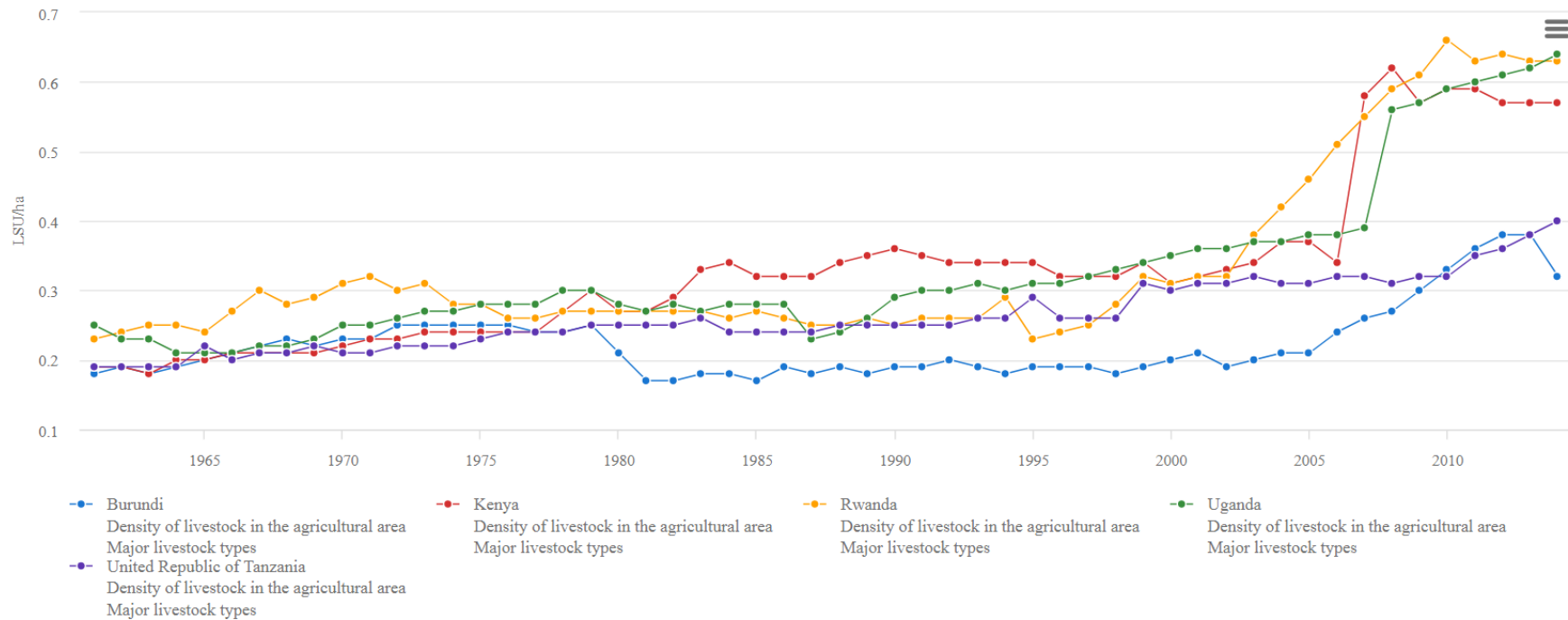
Component: biological resources

- Indicator: Livestock density (number of livestock per unit of pasture land);
- FDES Statistics: **2.5.4.a.1. Livestock number & 2.3.1.a Area under land use categories;**
- **Relevant to SDG 2.4.1;**
- FAOSTAT Agri-Environmental Indicators: **Livestock Patterns (EK) (also Eurostat) (all in Livestock units):**
 - Density of livestock in the agricultural area;
 - Share in total livestock;
 - Stocks.



Density of livestock in the agricultural area (LSU/ha)

Timeseries on selected data



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



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Livestock Patterns

The Livestock Patterns domain of the FAOSTAT Agri-Environmental Indicators contains data on livestock numbers, shares of major livestock species and... [Show More](#)

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Bulk Downloads

All Data	940 KB
All Data Normalized	2.86 MB
All Area Groups	152 KB
Africa	202 KB
Americas	167 KB
Asia	190 KB
Europe	143 KB
Oceania	44 KB

Last Update

July 6, 2017

Related Documents

[README_Methodological_Note](#)

[Definitions and standa...](#)

[Metadata](#)

Sub-component 2.3 Land

- Priority area: Land use change
- Indicator: Land use change
- FDES Statistics: **2.3.1.a Area under land use categories** (directly informs also indicators *Total agricultural area; Indicators on use fertilizers/pesticides; Livestock density; Forest area*);
- Also part of indicators: *Proportion of land area by ownership categories; Proportion of land area affected by contamination;*
- Relevant to SDGs: **Goal 15 Sustainable use of terrestrial ecosystems**



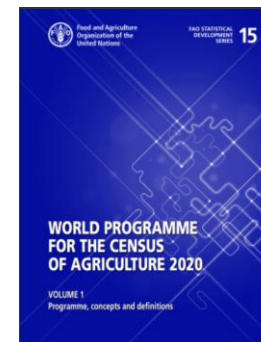
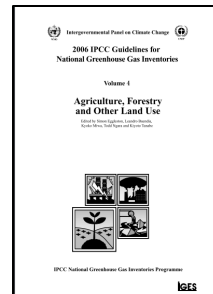
Land Use and irrigation Questionnaire

230 Countries and Territories – Time series 1961-present:

- Country area (*denominator*)
- Land area (*denominator*)
- Agricultural area
- Total area equipped for irrigation
- Forest area
- Carbon Stock (from FAO Global Forest Resources Assessment – FRA)
- Fertilizers, Pesticides Use

Forthcoming
update to
2015

Aligned with SEEA and FDES; Mapped unto to WCA2020 and IPCC



Land Use

Land Use data include information for: Country area (including area under inland water bodies), Land area (excluding area under inland water bodies... [Show More](#))

Food and Agriculture Organization of the United Nations (FAO)

Bulk Downloads

All Data	355 KB
All Data Normalized	1.07 MB
All Area Groups	61 KB
Africa	66 KB
Americas	59 KB
Asia	66 KB
Europe	73 KB
Oceania	17 KB

Last Update

December 7, 2016

Related Documents

Land Use

Definitions and standa...

Metadata

Inputs

Land Use

Land Use data include information for: Country area (including area under inland water bodies), Land area (excluding area under inland water bodies... [Show More](#)

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Asia	66 KB
Europe	73 KB
Oceania	17 KB

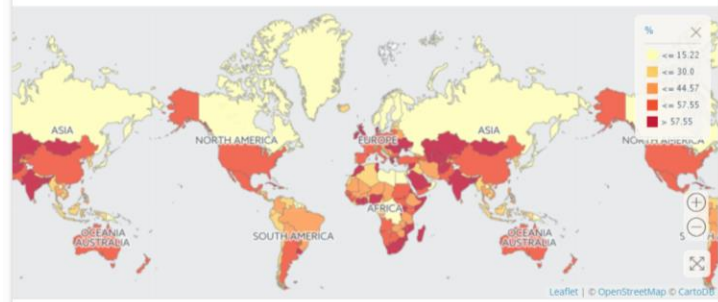
Last Update
December 7, 2016

Related Documents
[Land Use](#)

Definitions and standa...

Metadata

Agricultural area - Share in Land area by country (%)
Average 1994 - 2014



AEIndicators

Land Use

The Agri-environmental Indicators—Land domain provides information on the annual evolution of the distribution of... [Show More](#)

Food and Agriculture Organization of the United Nations (FAO)

Bulk Downloads

All Data	228 KB
All Data Normalized	761 KB
All Area Groups	33 KB
Africa	48 KB
Americas	42 KB
Asia	46 KB
Europe	43 KB
Oceania	13 KB

Last Update
July 6, 2017

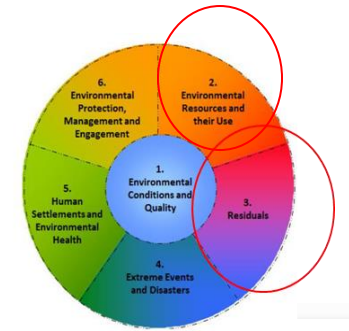
Related Documents
[README_Methodological_Note](#)

Definitions and standa...

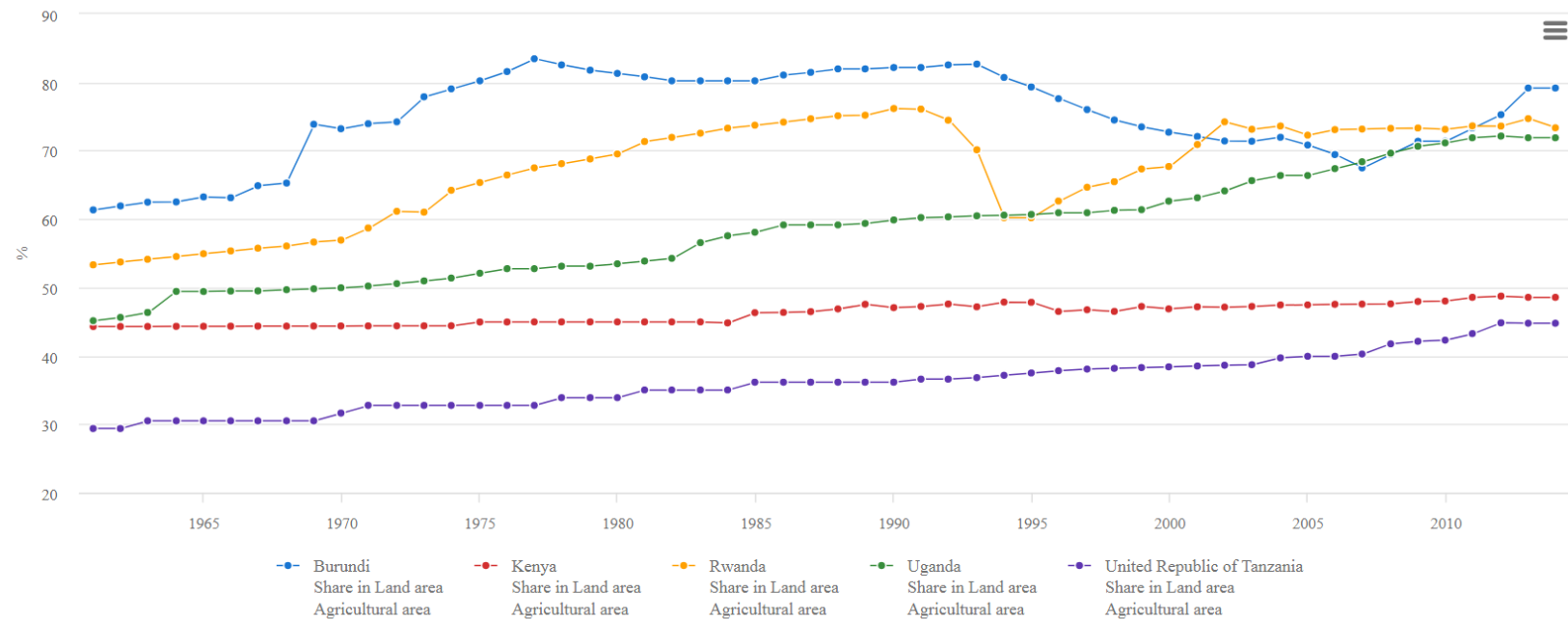
Metadata

Land Use

Share of Agricultural area in Land area (%)



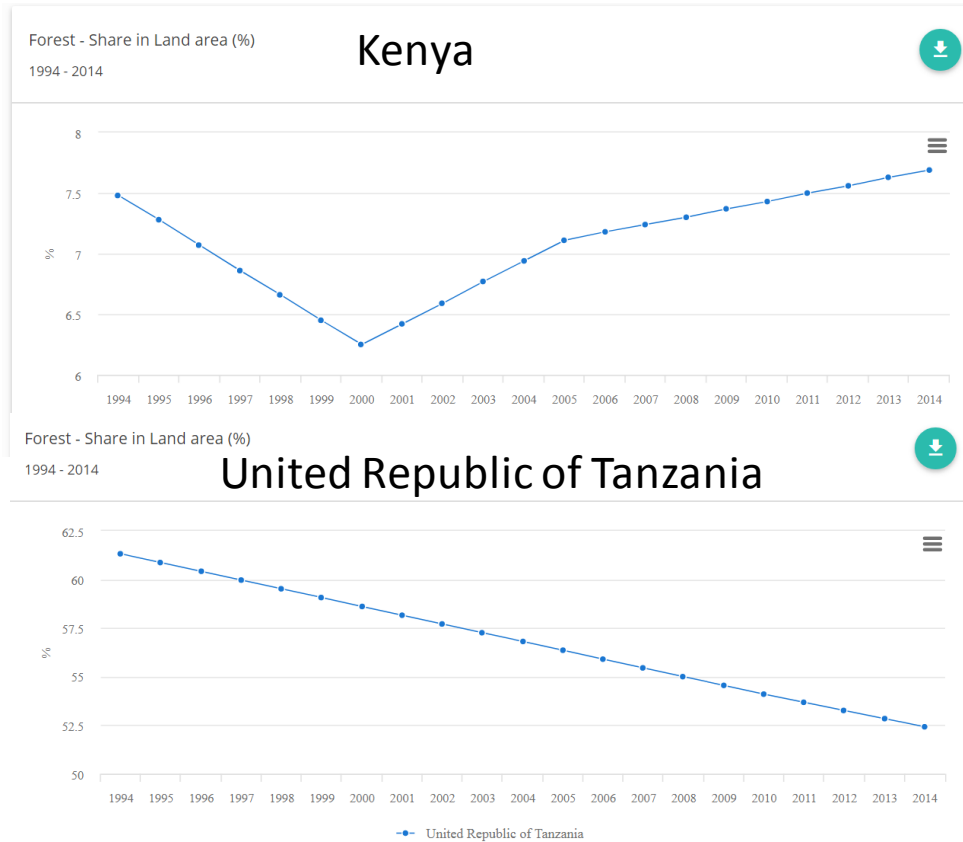
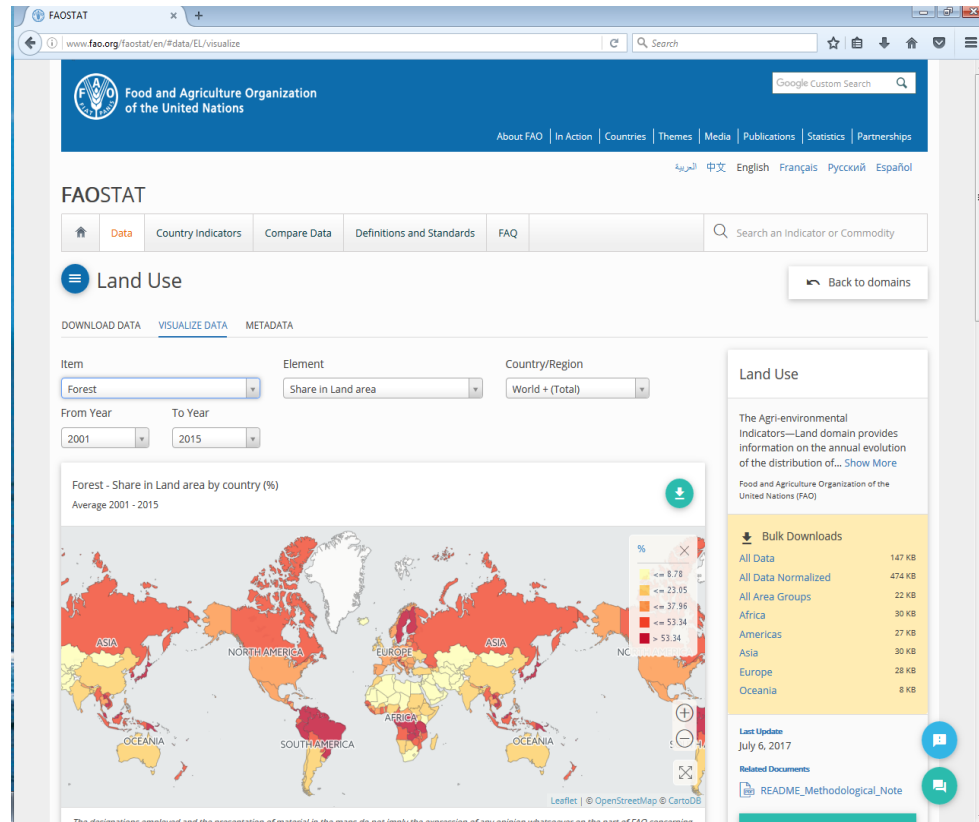
Timeseries on selected data



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

FAOSTAT Agri-Environmental Indicators: Land use

SDG 15.1.1: Share of forest area over total area



In FAOSTAT: FRA data and interpolated between assessments:
<http://www.fao.org/faostat/en/#data/EL/visualize>

Webpage for SDGs under FAO custodianship:

Go Clear Back

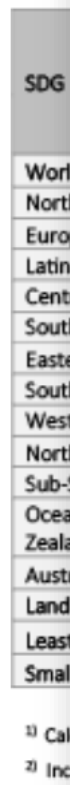
Indicator : 15.2.1 - Progress towards sustainable forest management

CSV Excel Show 100 entries Search:

Series Type	Series Description	Country or Area Code	Country or Area Name	LDC	LLDC	SIDS	Frequency	Source type
+	Above-ground biomass in forest	CAN	Canada				Annual	Not available
+	Above-ground biomass in forest	GRL	Greenland				Annual	Not available
+	Above-ground biomass in forest	USA	United States of America				Annual	Not available
+	Above-ground biomass in forest	BLN	Belarus				Annual	Not available
+	Above-ground biomass in forest	BGR	Bulgaria				Annual	Not available
+	Above-ground biomass in forest	CZE	Czechia				Annual	Not available
+	Above-ground biomass in forest	HUN	Hungary				Annual	Not available
+	Above-ground biomass in forest	POL	Poland				Annual	Not available
+	Above-ground biomass in forest	MDA	Republic of Moldova		True		Annual	Not available
+	Above-ground biomass in forest	ROU	Romania				Annual	Not available
+	Above-ground biomass in forest	RUS	Russian Federation				Annual	Not available

<https://unstats.un.org/sdgs/indicators/database/?indicator=15.2.1>

Showing 1 to 100 of 1 220 entries Previous 1 2 3 4 5 12 Next



Conclusions

- FAO collects, analyzes and disseminates environment statistics from its member countries;
- FAOSTAT core and analytical data support FDES core statistics at Tier 1 and can thus contribute to country analyses;
- FAO maintains a direct dialogue with national statistical agencies that can inform on specific data reporting gaps and associated capacity development needs.



The ENV Team

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Nathan Wanner, Statistician

Simona Mosco, Statistical Clerk, Fertilizers

Giorgia de Santis, Statistical Clerk, Land use and Pesticides

Silvia Cerilli, Agricultural Economist

Fabio Mozzillo, Statistical Clerk, Fertilizers

Andrea Alcibiade, Statistical Clerk, Pesticides

Francy Lisboa, Agronomist – Environmental Analyst

Heather Jacobs, Environmental Analyst

Sylvaine Thomas, Team Assistant

THANK YOU

Web page:

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

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

Inputs;

Agri-environmental indicators;

Emissions – Agriculture

Emissions – Land use



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